North Carolina Department of Transportation
Statewide Planning Branch
Small Urban Planninng Unit

CITY OF STATESVILLE

THOROUGHFARE PLAN

February, 1997

STATESVILLE THOROUGHFARE PLAN

February, 1997

Prepared by the:

Small Urban Planning Unit
Statewide Planning Branch
North Carolina Department of Transportation

In Cooperation with:

The City of Statesville
The Federal Highway Administration
The U.S. Department of Transportation

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ACKNOWLEDGMENTS

The coordinated efforts of many individuals and government agencies made Statesville's Thoroughfare Plan possible. Statesville's Planning & Zoning Board along with Statesville's City Council actively participated with the Department of Transportation to enable an effective thoroughfare planning process. By debating and choosing between difficult alternatives, Planning Board and City Council members helped ensure this thoroughfare plan minimizes predictable community and environmental problems.

The Project Engineer conducted Statesville's thoroughfare planning process and wrote this report. The Thoroughfare Planning Engineer was responsible for providing necessary practical experience to ensure the plan conforms with the Small Urban Unit's objectives. The Statewide Planning Branch Manager was responsible for making sure the thoroughfare plan conformed with Department of Transportation policy.

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1. INTRODUCTION

A city's transportation system is one of the most important factors contributing to the economic and social quality of life in the area. Because municipal transportation systems affect so many people and are very expensive to construct, developing transportation systems requires extensive planning. Policy makers established a "thoroughfare planning process" to guide transportation planning activities.

The primary objective of thoroughfare planning is to provide a transportation system which can progressively develop to meet future travel demands. By developing the street system to keep pace with increasing traffic demands, street capacity can be maximized. Proper planning saves money by eliminating unnecessary improvements and minimizing the amount of land needed for streets. Other thoroughfare planning objectives include:

- reducing transportation related environmental impacts, such as air, water, land, and noise pollution,
- reducing travel and transportation costs,
- reducing the cost of street improvements to the public through the coordination of subdivision and commercial developments with street developments,

- enabling local citizens to plan their actions with full knowledge of public intent,
- minimizing disruption and displacement of people and businesses through published long range street improvement plans, and
- increasing travel safety.

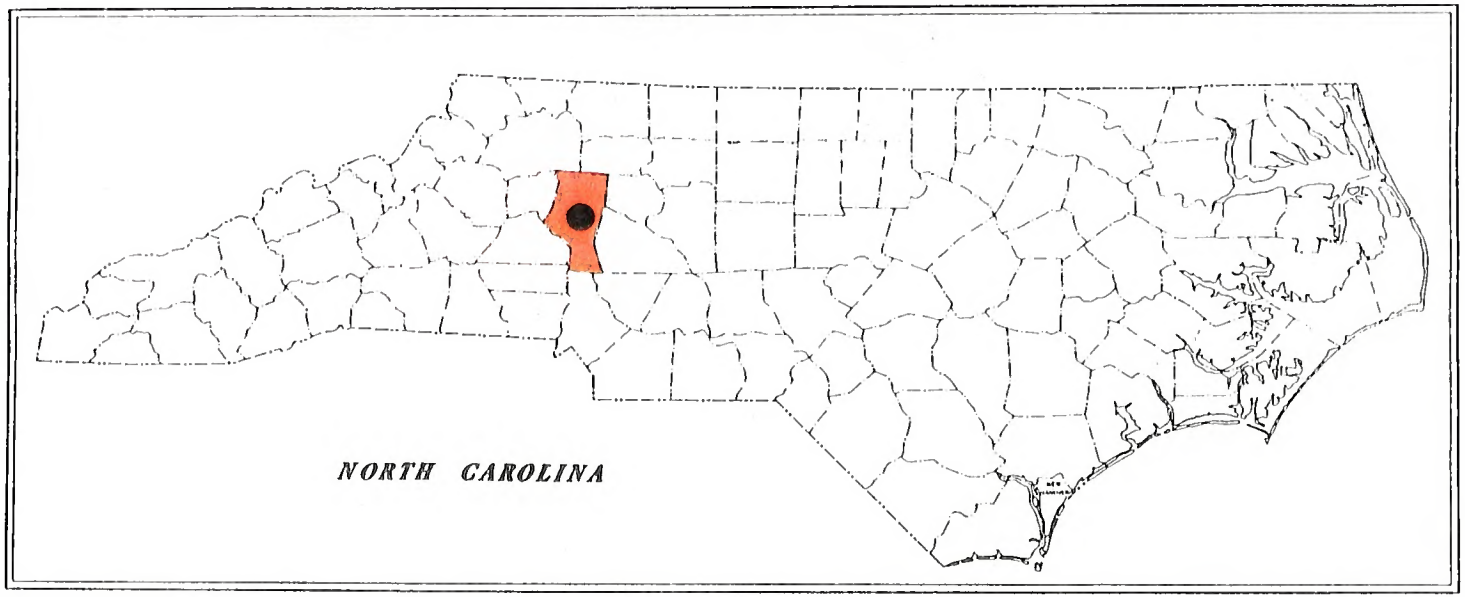
Statesville, illustrated in Figure 1-1, requested the Department of Transportation for assistance developing a Thoroughfare Plan on August 29, 1991. Statesville's Planning Board and City Council participated in the thoroughfare planning process. On June 5, 1995, the Statesville City Council adopted the Statesville Thoroughfare Plan map dated June 5, 1995. Subsequently, the North Carolina Department of Transportation adopted the plan on August 4, 1995.

Statesville's Thoroughfare Plan map is a long-range transportation plan which illustrates how the street system will probably be classified in thirty years. This report documents the thoroughfare planning process. After the introduction chapter, there are three chapters of the report:

- Chapter 2 details the Statesville Thoroughfare Plan Recommendations;
- Chapter 3 details the local involvement during the thoroughfare planning process; and
- Chapter 4 details implementation options.

At the end of the report, there are several appendices with additional information on the computer traffic forecasting model and other related items.

GEOGRAPHIC LOCATION OF STATESVILLE



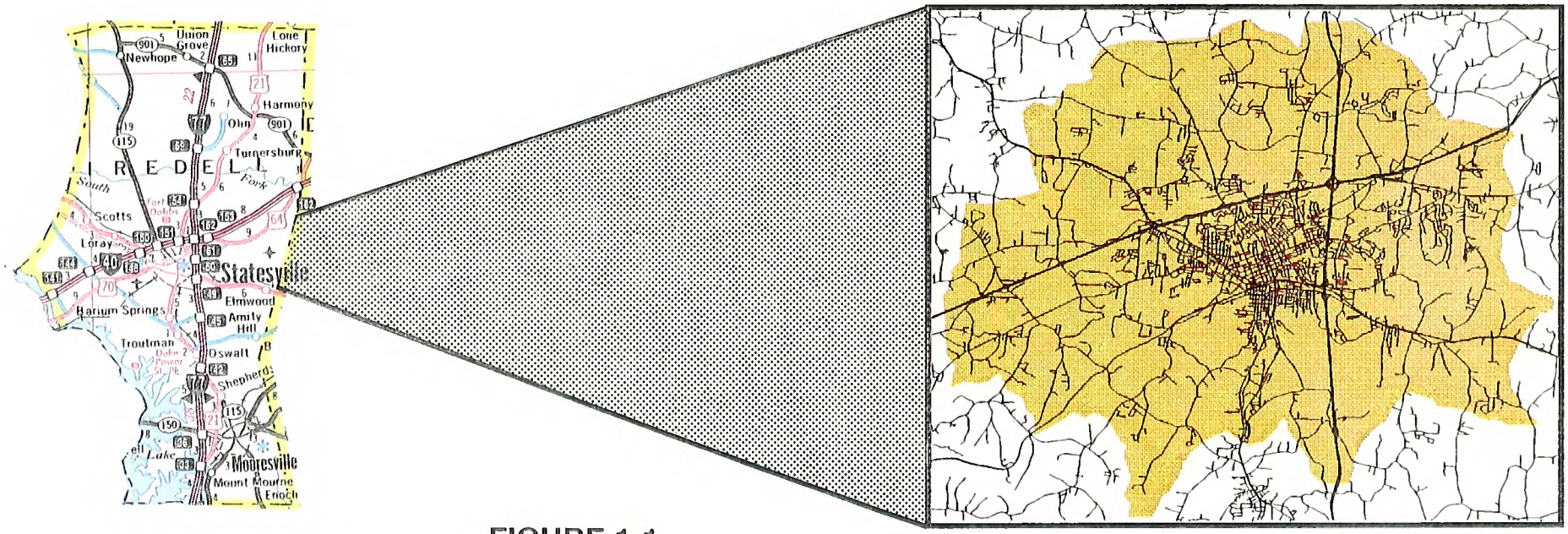


FIGURE 1-1

2. RECOMMENDATIONS

Recommendations are based on the thoroughfare planning principles (Appendix A), Statesville's travel deficiency analysis (Appendix B), and a computer traffic model (Appendix C). Figure 2-1 illustrates the thoroughfare plan mutually adopted by Statesville and the North Carolina Department of Transportation. Additional information on environmental concerns is discussed in Appendix D. Department of Transportation recommendations are tabulated in Appendix E with references to typical thoroughfare cross-sections illustrated in Appendix F.

This chapter discusses thoroughfare plan recommendations and project benefits. Recommendations are organized by road function in the following five categories:

- Major Bypass Thoroughfare
- Major Loop Thoroughfares
- Major Radial Thoroughfares
- Other Major Thoroughfares
- Minor Thoroughfares

MAJOR BYPASS THOROUGHFARES

Interstate Highway 40 (I-40) and Interstate Highway 77 (I-77) are Statesville's major thoroughfare bypasses. I-40 provides access across the Unites States from North Carolina to California, and I-77 provides access to the eastern United States. Both of these interstate highways are designed primarily for high speed through-traffic that does not have an origin or destination in Statesville. With traffic projections along both interstate highways ranging from 63,000 to 81,000 vehicles per day, the four-lane cross sections will need to be widened to six lanes during the next 20 years.

MAJOR LOOP THOROUGHFARES

Statesville's Thoroughfare Plan has three loop facilities. Figure 2-2 highlights the three loop facilities on the adopted thoroughfare plan.

Statesville's Small Loop

Eight existing roads along with two proposed roads almost make a continuous loop around the core of Statesville's development. Having a continuous loop facility around the central business district will provide vehicles convenient access to downtown areas without congesting the radial streets. Starting at Center Street and following a clockwise path, each road is listed sequentially with any recommended improvements.

- **Hartness Road** - From Center Street to Brookdale Drive with projections ranging from 6,000 to 8,800 vehicles per day, the existing two lanes of pavement will be adequate.
- **Sullivan Road** - From approximately one kilometer north of Davie Avenue to Davie Avenue with projections of 13,000 vehicles per day, the existing pavement width will be adequate.
- **East End Avenue** - From Sullivan Road to Broad Street with projections of 15,800 vehicles per day, a five-lane section will be needed; from Broad Street to the Proposed East End Avenue Extension with projections of 8,700 vehicles per day, the existing two lanes of pavement will be adequate.

Thoroughfare Plan

June 5, 1995

LEGEND

	existing	proposed
Freeway		
Major Thoroughfare		
Minor Thoroughfare		
Interchange		
Grade Separation		

Adopted by:

Statesville June 5, 1995

Recommended by Statewide Planning Branch June 21, 1995

NC Dept. of Transportation August 4, 1995

Public Hearing May 15, 1995

FIGURE 2-1

N

STATESVILLE

and vicinity

IREDELL COUNTY

NORTH CAROLINA

PREPARED BY

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS-STATEWIDE PLANNING BRANCH

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

BASE MAP

- **Proposed East End Avenue Extension** - From East End Avenue to Berkshire Drive with projections of 7,000 vehicles per day, a new two-lane road connector will be needed.
- **Berkshire Drive** - From Proposed East End Avenue Extension to Proposed Berkshire Drive Extension with projections of 6,600 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Berkshire Drive Extension** - From Berkshire Drive to Opal Street with projections of 6,500 vehicles per day, a new two-lane road connector will be needed.
- **Opal Street** - From Proposed Berkshire Drive Extension to Garner Bagnal Boulevard with projections of 5,000 vehicles per day, the existing two lane road will be adequate.
- **Garner Bagnal Boulevard** - From Opal Street to Oakland Avenue with projections of 20,000 vehicles per day, a four-land divided facility will be needed.
- **Oakland Avenue** - From Garner Bagnal Boulevard to Ridgeway Avenue with projections ranging from 4,700 to 6,000 vehicles per day, the existing two-lane road will be adequate.
- **Ridgeway Avenue** - From Oakland Avenue to Hartness Road with projections ranging from 2,200 to 6,000 vehicles per day, the existing two-lane road will be adequate.

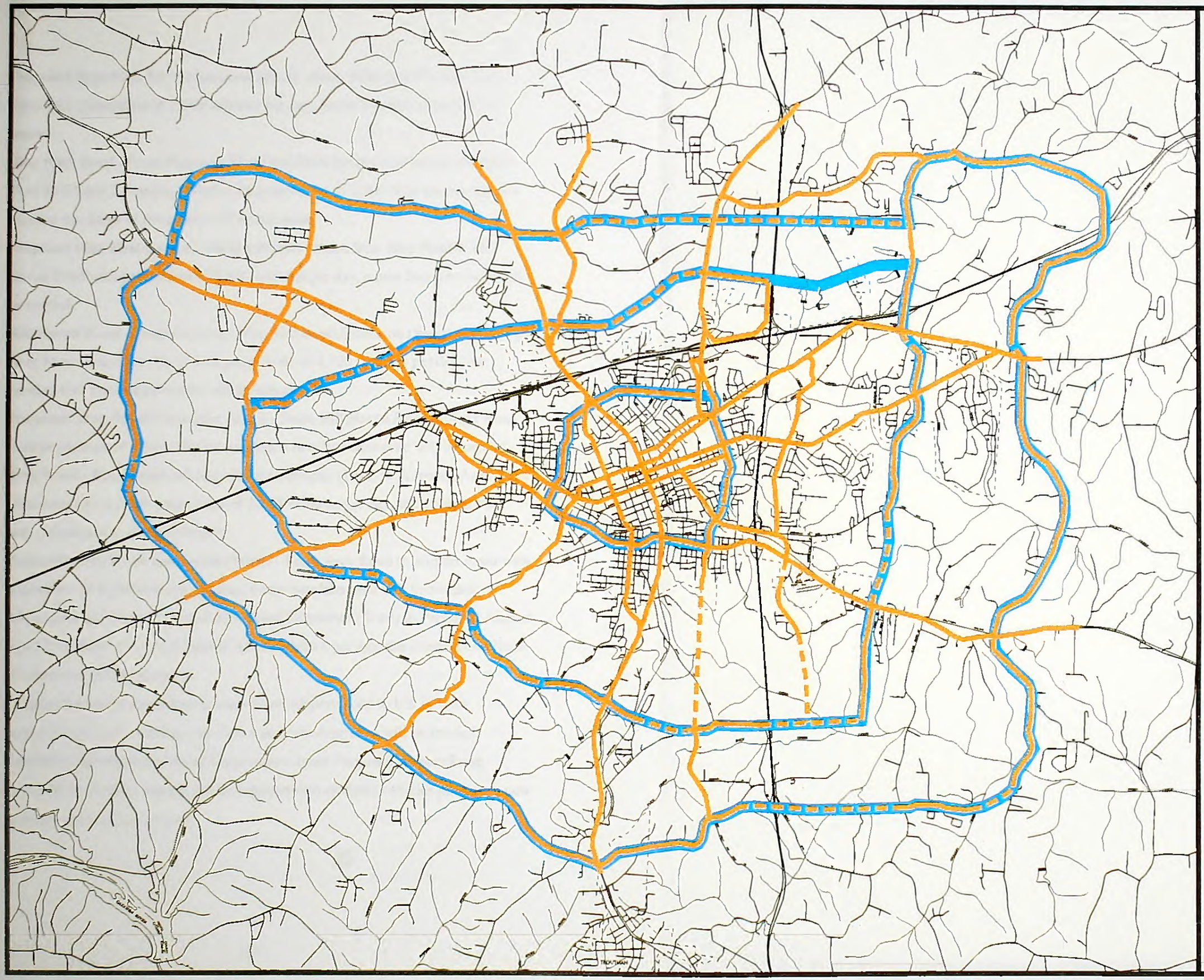
Statesville's Medium Loop

The medium-loop roads almost make a continuous loop ranging from one to two miles outside of the small-loop roads. Having this continuous loop facility will provide vehicles convenient access to these suburban areas without congesting the radial streets. Starting at Interstate 77 and following a clockwise path, each road is listed sequentially with any recommended improvements as follows:

- **Missing Link** - From James Farm Road to Old Mocksville Road, the thoroughfare planning engineer recommended constructing a new two-lane road

on four lanes of right-of-way. There was a proposed bridge over I-77 to connect James Farm Road with this missing link. However, the Statesville City Council removed this link.

- **Old Mocksville Road** - From Proposed Missing Link to SR 2206 with projections of 12,700 vehicles per day, a four-lane section with a raised (landscaped) median will be needed.
- **SR 2206** - From Old Mocksville Road to US 64 with projections ranging from 8,400 to 20,100 vehicles per day, the existing four lanes of pavement will be adequate.
- **Proposed SR 2206 Extension** - From US 64 to Greenbriar Road with projections of 7,400 vehicles per day, a new two-lane road connector will be needed.
- **Greenbriar Road** - From Proposed SR 2206 Extension to Twin Oaks Road with projections of 8,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Greenbriar Road Extension** - From Greenbriar Road to US 70 with projections of 5,300 vehicles per day, a new two-lane road will be needed.
- **Third Creek Road** - From US 70 to Proposed Third Creek Road Extension with projections of 1,700 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Third Creek Road Extension** - From Third Creek Road to Amity Hill Road with projections ranging from 1,700 to 4,600 vehicles per day, a new two-lane road will be needed.
- **Amity Hill Road** - From Proposed Third Creek Road Extension to Mills Road with projections of 3,600 vehicles per day, the existing two lanes of pavement will be adequate.
- **Mills Road** - From Amity Hill Road to Proposed Blue Bird Road Extension (East) with projections of 2,500 vehicles per day, the existing two lanes of pavement will be adequate.



LEGEND

existing proposed

Major Thoroughfare

FIGURE 2-2

LOOP
THOROUGHFARES

N

STATESVILLE

and vicinity

IREDELL COUNTY

NORTH CAROLINA

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BASE MAP

- **Proposed Blue Bird Road Extension (East)** - From Mills Road to Blue Bird Road with projections of 2,500 vehicles per day, a new two-lane road will be needed.
- **Blue Bird Road** - From Proposed Blue Bird Road Extension (East) to Proposed Blue Bird Road Extension (West) with projections of 2,500 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Blue Bird Road Extension (West)** - From Blue Bird Road to Hill Haven Road with projections of 2,500 vehicles per day, a new two-lane road will be needed.
- **Hill Haven Road** - From Proposed Blue Bird Road Extension (West) to Proposed Arey Road Connector (East) with projections of 4,100 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Arey Road Connector (East)** - From Hill Haven Road to Arey Road with projections of 3,300 vehicles per day, a new two-lane road will be needed.
- **Arey Road** - From Proposed Arey Road Connector (East) to Proposed Arey Road Connector (West) with projections of 4,100 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Arey Road Connector (West)** - From Arey Road to Airport Road with projections of 4,200 vehicles per day, a new two-lane road will be needed.
- **Airport Road** - From Proposed Arey Road Connector (West) to Proposed Airport Road Extension with projections of 6,500 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Airport Road Extension** - From Airport Road to US 70 with projections of 5,400 vehicles per day, a new two-lane road will be needed.
- **Proposed Stamey Farm Road Connector** - From Proposed Airport Road Extension to Stamey Farm Road with projections of 4,000 vehicles per day, a new two-lane road will be needed.

- **Stamey Farm Road** - From Proposed Stamey Farm Road Connector to Wood Bridge Road with projections of 4,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Wood Bridge Road** - From Stamey Farm Road to Proposed Cannon Road Connector with projections of 4,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Cannon Road Connector** - From Wood Bridge Road to Cannon Road with projections of 1,500 vehicles per day, a new two-lane road will be needed.
- **Cannon Road** - From Proposed Cannon Road Connector to Proposed Monticello Drive Extension with projections of 1,500 vehicles per day, pave the existing two travel lanes.
- **Proposed Monticello Drive Extension** - From Cannon Road to Monticello Drive with projections of 1,500 vehicles per day, a new two-lane road will be needed.
- **Monticello Drive** - From US 64 to Bradley Farm Road with projections of 6,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Bradley Farm Road** - From Monticello Drive to Old Wilkesboro Road with projections of 3,600 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Bradley Farm Road Extension** - From Old Wilkesboro Road to Chipley Ford Road with projections of 3,600 vehicles per day, a new two-lane road will be needed.
- **Museum Road** - From Chipley Ford Road to Proposed Museum Road Extension with projections of 2,500 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Museum Road Extension** - From Museum Road to James Farm Road with projections of 1,800 vehicles per day, a new two-lane road on four lanes of right-of-way will be needed.
- **James Farm Road** - From US 21 to the missing-link with projections of 3,000 vehicles per day, the existing two lanes of pavement will be adequate.

Statesville's Large Loop

The large-loop roads make a continuous loop just inside the planning area boundary. Having this continuous loop facility will provide vehicles convenient access to these suburban areas without congesting the radial streets. Starting at Interstate 77 and following a clockwise path, each road is listed sequentially with recommended improvements as follows:

- **Sullivan Farm Road Extension** - From I-77 to Old Mocksville Road with projections ranging from 3,300 to 5,800 vehicles per day, a new two-lane road on four lanes of right-of-way will be needed.
- **Old Mocksville Road** - From Sullivan Farm Road Extension to Chestnut Grove Road with projections ranging from 6,900 to 12,700 vehicles per day, the existing two lanes of pavement will be adequate.
- **Chestnut Grove Road** - From Old Mocksville Road to River Hill Road with projections of 1,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **River Hill Road** - From Chestnut Grove Road to Proposed River Hill Road Connector with projections of 2,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed River Hill Road Connector** - From River Hill Road to Bell Farm Road with projections of 2,600 vehicles per day, a new two-lane road will be needed.
- **Bell Farm Road** - From US 64 to US 70 with projections of 3,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Moose Cave Road Connector** - From Bell Farm Road to Moose Cave Road with projections of 3,500 vehicles per day, a new two-lane road will be needed.
- **Moose Cave Road** - From Proposed Moose Cave Road Connector to Bethesda Road with projections of 3,500 vehicles per day, the existing two lanes of pavement will be adequate.

- **Bethesda Road** - From Moose Cave Road to Proposed Clements Road Extension (East) with projections of 2,700 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Clements Road Extension (East)** - From Bethesda Road to Clements Road with projections of 700 vehicles per day, a new two-lane road will be needed.
- **Clements Road** - From Proposed Clements Road Extension (East) to Shiloh Church Road with projections of 700 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Clements Road Extension (West)** - From Shiloh Church Road to Murdock Road with projections of 4,900 vehicles per day, a new two-lane road will be needed. The existing skewed interchange with Amity Hill Road and I-77 should be realigned when I-77 is widened. Consequently, Clements Road Extension will cross I-77 at a 90 degree angle, and Amity Hill Road will intersect with Clements Road Extension away from the interchange.
- **Murdock Road** - From Proposed Clements Road Extension (West) to US 21 with projections of 9,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Old Mountain Road** - From US 21 to US 70 with projections ranging from 10,500 to 12,000 vehicles per day, the existing two lanes of pavement will be adequate. From US 70 to I-40 with projections of 15,000 vehicles per day, the road should be widened to a four-lane divided facility with a raised (landscaped) median. From I-40 to the proposed Murdock Road Connector with projections of 9,400 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Lippard Farm Road Connector** - From Old Mountain Road to Island Ford Road with projections of 2,200 vehicles per day, a new two-lane road will be needed.
- **Lippard Farm Road** - From Island Ford Road to US 64 with projections of 3,000 vehicles per day, the existing two lanes of pavement will be adequate.

- **Proposed Lippard Farm Road Extension** - From US 64 to Scotts Creek Road with projections of 1,200 vehicles per day, construct a new two-lane road.
- **Scotts Creek Road** - From Proposed Murdock Road Extension to Sullivan Farm Road with projections ranging from 3,000 to 5,000 vehicles per day, the existing two lanes of pavement will be adequate.
- **Sullivan Farm Road** - From Scotts Creek Road to Chipley Ford Road with projections of 2,500 vehicles per day, the existing two lanes of pavement will be adequate.
- **Proposed Sullivan Road Extension** - From Sullivan Farm Road to I-77 with projections of 2,000 vehicles per day, construct a new two-lane road on four lanes of right-of-way.

MAJOR RADIAL THOROUGHFARES

Statesville has twelve major radial thoroughfare corridors illustrated in Figure 2-3. Major radial facilities provide vehicles convenient access from outside the central business area to inside the central business area. Starting at the US 21 corridor north of Statesville and following a clockwise path, each road is listed sequentially with the recommended improvements.

US 21 Corridor (North of Statesville)

The US 21 Corridor north of Statesville is a very important travel corridor which contains a significant traffic bottleneck -- the narrow bridge under I-40. Sullivan Road under the I-40 bridge will need to be widened to a five-lane section with a "single-point diamond interchange."

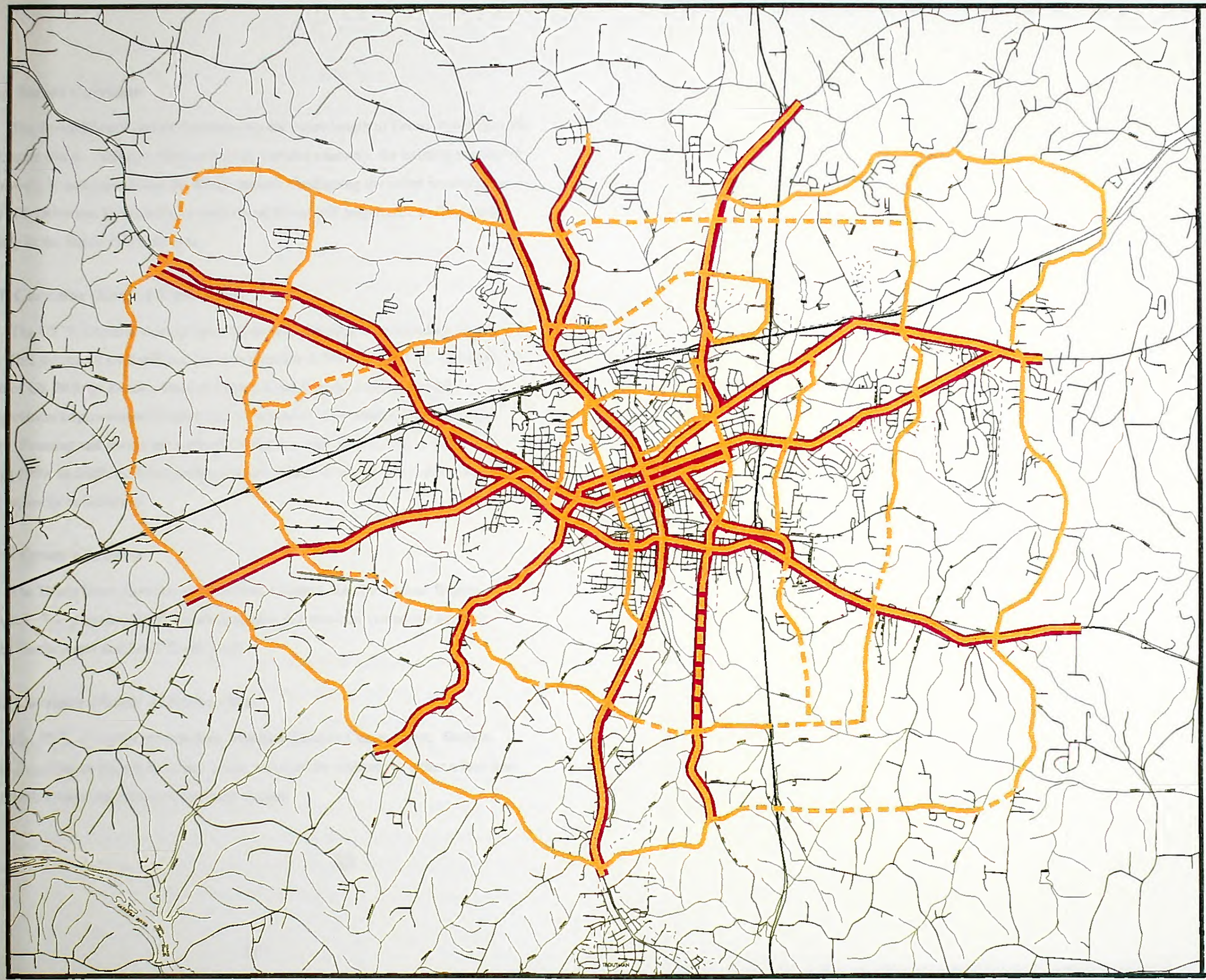
US 21 from I-77 to Fourth Creek Landing should be widened to either a five-lane section or a four-lane section with a raised median. Similarly, Sullivan Road from the I-40 eastbound ramps to Lakeside Drive should be widened to either a five-lane section or a four-lane section with a raised median. Since both the five-lane cross-section and the four-lane cross section with a raised median require the same right-of-way, the decision

for which cross-section is ultimately constructed will depend on what type of character Statesville wants for these sections of roadway. In general, five-lane cross-sections are less expensive to build and maintain than four-lane sections with a raised median. However, four-lane sections with a raised median are safer and have the ability to be landscaped to provide a more pleasing community character.

Sullivan Road from Lakeside Drive to Davie Avenue will reach capacity by the year 2020, but will not be widened due to strong local opposition. Brookdale Drive is a parallel facility which can provide some relief to this section of Sullivan Road. The proposed Brookdale Drive Connector is a two-lane facility which can divert some of the Sullivan Road traffic away from the narrowest section of Sullivan Road.

Mocksville Road Corridor

The Mocksville Road Corridor includes five streets -- US 64, Mocksville Road, Davie Avenue, Stockton Street, and Water Street. This corridor is another a important travel corridor which contains a significant traffic bottleneck -- the five-point intersection with Sullivan Drive. The five-point intersection problem will be reduced by converting Davie Avenue into a one-way pair with Stockton Street. Using Davie Avenue and Stockton Street as a one-way pair will make the five-point intersection operate effectively as a four-leg intersection. Davie Avenue would flow away from downtown and Stockton Street would flow into the downtown. In addition, US 64 should be widened to a four-lane divided section with a raised median from Bell Farm Road to Martin Lane.



LEGEND

existing proposed

Major Thoroughfare

FIGURE 2-3

RADIAL
THOROUGHFARES

N

STATESVILLE

and vicinity

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NORTH CAROLINA

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BASE MAP

Broad Street Corridor

The Broad Street Corridor encompasses the entire length of Broad Street from US 64 to Center Street. Although this is a heavily traveled roadway, the existing number of lanes should be adequate during the design period. Realigning the offset intersections of Signal Hill Drive and Eastside Drive with Broad Street will help traffic to flow more smoothly in the Signal Hill Mall area.

US 70 Corridor (East of Statesville)

The US 70 Corridor extends from the eastern planning area boundary to Salisbury Road. This section of road will need to be widened to a five-lane facility. Currently, the section of US 70 from Barkley Road to Fanjoy Road is in the North Carolina Transportation Improvement Program and is scheduled to be widened to a multi-lane section. Planning and design are currently underway, and construction is scheduled to begin in 1999. In addition, Transportation Improvement Project # 2911 will widen US 70 from Statesville to Salisbury.

Harris Street Corridor

The Harris Street Corridor extends from Murdock Road to Garner Bagnal Boulevard. The proposed Harris Street Extension is a two-lane connector between existing Harris Street and Duck Creek Road.

US 21 Corridor (South of Statesville)

The US 21 Corridor extends from Murdock Road to Center Street. Shelton Avenue from Garner Bagnal to Center Street will need be widened to either a four-lane section with a raised median, or a five-lane section.

Buffalo Shoals Road Corridor

Buffalo Shoals Road Corridor extends from Old Mountain Road to Center Street. The proposed connector between Buffalo Shoals Road and West End Avenue is a two-lane facility. This connector will provide continuous traffic flow between Buffalo Shoals Road and West End Avenue.

US 70 Corridor (West of Statesville)

The US 70 Corridor extends from Old Mountain Road to Garner Bagnal Boulevard. Both US 70 and Newton Drive have an adequate capacity to meet the traffic demands in 2020.

US 64 Corridor (West of Statesville)

The US 64 Corridor west of Statesville extends from Lippard Farm Road to Garner Bagnal Boulevard. In 1995, a new two-lane facility on four lanes of right-of-way was opened to traffic and designated as US 64. With the new US 64 in place, the old US 64 will have adequate capacity to meet the traffic demands in 2020.

NC 115 Corridor

Center Street is the most direct route for traffic traveling between I-40 and the central business district. NC 115 from Scotts Creek Road to Center Street will have adequate capacity to meet the traffic demands in 2020. However, Center Street from the northern City Limit to Race Street will need to be widened to a five-lane facility, or to a four-lane divided facility with a raised median. Since both the five-lane cross-section and the four-lane cross-section with a raised median require the same right-of-way, the decision for which cross-section is ultimately constructed will depend on what type of character Statesville wants for these sections of roadway. In general, five-lane cross-sections are less expensive to build and maintain than four-lane sections with a raised median. However, four-lane sections with a raised median are safer and have the ability to be landscaped to provide a more pleasing community character.

Chipley Ford Road Corridor

The Chipley Ford Road Corridor parallels NC 115 north of Statesville. The entire length of Chipley Ford Road from Gryder Road to Center Street has adequate capacity to meet the 2020 traffic demands.

OTHER MAJOR THOROUGHFARES

There are several other major thoroughfares which serve cross-town movements or serve as important "connector" movements. Although these other major thoroughfares serve abutting property, they also have a principle function of carrying traffic.

Cross-Town Streets

Statesville has three major thoroughfares listed as cross-town streets. First, Front Street serves the east-west traffic movements in the central business district. Second, Race Street generally parallels Center Street and serves the north-south traffic movement for people avoiding Center Street. The thoroughfare plan shows a bridge replacement which straightens out the connection of Race Street with Wilson Lee Boulevard. Third, the Signal Hill Drive Corridor (including Signal Hill Drive, Eastside Drive, and part of Barkley Road) serves the north-south traffic movement east of I-77.

Other Connector Streets

Statesville has three other connector streets that are difficult to classify under the previous major thoroughfare functions. Wood Bridge Road, and Little Farm Road, are existing roads that connect the medium-loop and large-loop facilities. The Thoroughfare plan shows a proposed connector between Wood Bridge Road and Little Farm Road to fix the off-set intersection with Old US 64. Jane Sowers Road is an existing road that parallels the proposed Sullivan Farm Road Extension. Jane Sowers Road will serve as part of the large loop facility until the proposed Sullivan Farm Road Extension is constructed.

MINOR THOROUGHFARES

There are twenty-nine minor thoroughfares shown on Statesville's Thoroughfare Plan. These minor thoroughfares connect local streets to the major thoroughfare system. They provide some access to abutting property, but they should be protected enough to allow a safe traffic flow to the major thoroughfares.

- Airport Road
- Amity Hill Road
- Bost Street
- Bristol Street
- Carolina Avenue
- Cooper Farm Road
- Crawford Road
- Fanjoy Road
- Folger Drive
- Free Nancy Avenue
- Gaither Road
- Greenbriar Road
- Gryder Road
- Island Ford Road
- Marlou Street
- Meacham Road
- Monroe Street
- Museum Road
- North Side Drive
- Old Wilkesboro Road
- Radio Road
- Shiloh Church Road
- Shumaker Road
- Tradd Street
- Twin Oaks Road
- Wall Street
- Wallace Springs Road
- Wilson Park Road
- Woods Drive

PROJECT BENEFITS

Statesville's Thoroughfare Plan contains many proposed new thoroughfares and widening projects. Each project affects different transportation users, and each project has different costs and benefits. This section of the report quantifies the positive and the negative aspects of each project. The analysis is based on Technical Report #8: Transportation Project Evaluation Using The Benefits Matrix Model published by the Statewide Planning Branch of the Department of Transportation. This analysis provides general information on the relative significance of each project to Statesville's Thoroughfare Plan.

Each project's benefits are determined by comparing the traffic on the existing street network with traffic on the thoroughfare plan network. Appendix-G shows the results from this analysis. Item one shows the monetized project benefits. Project

benefits include vehicle operating cost savings, travel time cost savings, and accident cost savings. Cost savings were calculated by comparing how much existing and future traffic would shift to use the proposed project.

Item two shows the project cost estimates. The cost estimates are based on average cost-per-mile construction information from across North Carolina. Because these cost estimates are not particular to Statesville or to specific roadway design plans, the actual construction costs may be significantly different. The costs listed in the table are useful for illustrating the relative cost difference between alternative projects.

Economic impacts are listed as item three. The probability of economic development enhanced by the project is ranked on a continuous scale from low to high. Projects which have a minimal probability of economic development have a value of zero. Projects which have a high probability of economic development have a value of one.

Environmental impacts are listed as item four. Impacts ranging from very negative to very positive correspond to values ranging from negative one to positive one. Physical environment considerations include: air pollution, water pollution, land pollution, noise pollution, geological resources, wildlife habitats, and natural vegetation. Social environmental considerations include: housing, neighborhoods, schools, churches, parks, public safety, national defense, and aesthetics. Each of these standard environmental factors are ranked and averaged for each project to generate the value listed in the table.

The average daily through trips in the design year are listed as the last item. The number of through trips indicate the significance the project will have on the State Arterial system. Projects which have high volumes of through traffic are more important to the State Arterial system. Projects which have very few through trips are more important to the local street system.

3. LOCAL INVOLVEMENT

In today's complex democratic society, creating a thoroughfare plan requires working with many different people. Often thoroughfare planning involves: transportation planning engineers, roadway design engineers, community planners, environmental specialists, federal agencies, state agencies, local officials, and local citizens. In April of 1992, Statesville initiated the current phase of *Statesville's thoroughfare planning process* by requesting the Department of Transportation for assistance updating the March 13, 1978, Statesville Thoroughfare Plan.

In February 1993, the Department of Transportation met with Statesville's City Council. At that meeting, the thoroughfare planning process and the time-line from "thoroughfare planning to road construction" was discussed. In addition, a proposed schedule for Statesville's Thoroughfare Plan was developed.

In May 1993, the Department of Transportation met with Statesville's City Council. At that meeting, the thoroughfare planning engineer explained how the housing and employment data would be collected for the entire planning area during the following weeks.

In October 1993, the Department of Transportation met with Statesville's Planning Board. At that meeting, the thoroughfare planning process and the time-line from "thoroughfare planning to road construction" was discussed. In addition, the proposed schedule for Statesville's Thoroughfare Plan was reviewed.

In January 1994, the Department of Transportation met with Statesville's Planning Board a second time. Population projections, employment projections, dwelling

unit projections, and land-use projections were all discussed. By the end of the meeting, everyone came to a consensus for the projections being used in the transportation model.

In May 1994, the Department of Transportation met with Statesville's Planning Board a third time. After a presentation of the computer model development and the associated traffic projections, the projected traffic problems were discussed. Planning Board members offered ideas for solving the projected traffic problems and requested the DOT to analyze different alternatives with the computer traffic model.

In June 1994, the Department of Transportation met with Statesville's Planning Board a fourth time. Discussion centered on the inner loop, the middle loop, and the outer loop. Planning Board members offered ideas for solving the projected traffic problems and requested the DOT to continue analyzing different alternatives with the computer traffic model.

In August 1994, the Department of Transportation met with Statesville's Planning Board a fifth time. Discussion centered on the Davie Avenue five-point intersection problems. Planning Board members expressed concern over fixing the five-point intersection by widening either Sullivan Road or Davie Avenue. By the end of the meeting, everyone realized that the five point intersection was a significant problem, but finding a solution would not be easy.

In October 1994, the Department of Transportation met with Statesville's Planning Board a sixth time. Discussion centered on the Davie Avenue five-point intersection problems. Although the Hartness Road Extension would reduce some of the traffic using the Davie Avenue five-point intersection, Planning Board members requested that the Hartness Road Extension be removed from the proposed thoroughfare plan. Planning Board members decided against making recommendations for using one-way pair streets to eliminate the Davie Avenue five-point intersection until City Council members were involved in the discussions.

In November 1994, the Department of Transportation met with Statesville's City Council and Planning Board to resolve the issue over fixing the Davie Avenue five-point

intersection traffic congestion problem. Local officials debated converting Davie Avenue and Stockton Street into a one-way pair to effectively eliminate one of the five legs of the five-point intersection. In addition, local officials debated the value of constructing a short connector road between Sullivan Road and Brookdale Road (through an existing vacant lot) to allow traffic a more direct flow between Sullivan Road and Brookdale Road. By the conclusion of the meeting, both the Planning Board and the City Council accepted this one-way pair and the short connector road (as shown on the thoroughfare plan) as the "least worst" alternative.

In February 1995, the Department of Transportation met with Statesville's Planning Board to resolve the issue over constructing a new interchange over I-77 for a proposed Theme Park development. The thoroughfare planning engineer recommended against the new interchange for three reasons. First, adding the interchange and the necessary connecting roads would add an estimated $7 to $12 million to the cost of implementing the proposed thoroughfare plan. Second, placing a new interchange midway between two existing interchanges (two miles apart) significantly restricts the ability to design a safe traffic weaving area. Third, the proposed theme park could have been adequately served by the existing interchange of I-40 & SR 2206 with a proposed four-land divided road connecting SR 2206 directly with the theme park site. However, at the conclusion of the meeting, the Planning Board recommended that the *Revised Statesville Thoroughfare Plan* be presented to the City Council with the new interchange on I-77 (as shown on the adopted thoroughfare plan).

In March 1995, the Department of Transportation met with Statesville's City Council. After a general overview of the work completed with Statesville's Planning Board, the City Council reviewed the preliminary thoroughfare plan. The City Council supported the Planning Board's recommendations and scheduled a public hearing for the next City Council Meeting.

In May 1995 the Department of Transportation held a public drop-in session and a public hearing on the Statesville Thoroughfare Plan. A public notice published in the *Statesville Record & Landmark* on May 14, 1995 invited the public to review the

thoroughfare plan and offer comments. No one from the general public attended the public drop-in session. At the public hearing, two people spoke against the one-way pair of Stockton Street and Davie Avenue. After the public hearing, the Statesville City Council adopted the March 21, 1995, Thoroughfare Plan map (with the addition of the James Farm Road Extension).

After the Statesville City Council adopted the Thoroughfare Plan on May 15, 1995, the Thoroughfare Plan was sent to the NC Board of Transportation (BOT) for adoption on June 2, 1995. Before the BOT could adopt the Thoroughfare Plan, the City of Statesville requested the Statesville Thoroughfare Plan be removed from the BOT agenda. Then, on June 5, 1995, the Statesville City Council reversed their decision on the James Farm Road Extension and adopted the June 5, 1995, Thoroughfare Plan map (without the James Farm Road Extension). Subsequently, the North Carolina Department of Transportation adopted the plan on August 4, 1995.

4. IMPLEMENTATION

Statesville's Thoroughfare Plan is a detailed set of recommendations for how the community should develop a street system to keep up with the area's growth. Because there are no guarantees the area will develop as planned, anticipated traffic growth and future capacity deficiencies may change. Before any of the proposed roads will be considered for construction, a detailed project study will determine if actual development justifies the projects. Environmental studies and roadway design plans will determine specific road alignments.

No one in the Department of Transportation has the job of implementing the recommendations listed in thoroughfare plans because funding is not available for building roads based on predicted need. Local officials are responsible for requesting projects as the need arises. With hundreds of municipalities competing for projects funded by the state's transportation budget, Statesville must make well planned requests to be effective. The documented public and political involvement, in addition to technical feasibility, give thoroughfare plan project requests the competitive edge over all other requests.

REGULATIONS

Communities that actively protect their thoroughfare corridors have the best success actually getting projects constructed. Protecting thoroughfare corridors saves citizens hundreds of thousands and even millions of dollars each year. Thoroughfare Plan adoption, subdivision regulations, future street line ordinances, zoning ordinances, development reviews, and official maps are regulations available to protect thoroughfare corridors.

Thoroughfare Plan Adoption

Section 136-66.2 of the North Carolina General Statutes provides guidelines for adopting a thoroughfare plan. After the municipality and the Department of Transportation cooperatively develop a thoroughfare plan, the plan may be adopted by the municipality and the Department of Transportation. Subsequently, the thoroughfare plan serves as the basis for future street and highway improvements.

The Statesville Thoroughfare Plan should be reviewed locally at least once a year. When significant changes are necessary, the municipality should request the Statewide Planning Branch of the Department of Transportation to update the thoroughfare plan. Depending on actual growth patterns, the plan should be formally updated once every five to ten years.

Subdivision Regulations

Subdivision regulations specify roadway width, right-of-way, and sight distances in new subdivisions. The Department of Transportation manual Subdivision Roads: Minimum Construction Standards documents the design, construction, and utility placement standards necessary for state maintained roads. Regulations are classified by road functions (local street, collector street, etc.). Appendix G contains an example subdivision ordinance. These regulations minimize roadway safety hazards and maintenance costs. Municipalities must have developers construct roads to North Carolina subdivision road standards for the North Carolina Department of Transportation

to accept and maintain the road. Roads not meeting state regulations must be constructed and maintained by local or private funding.

Statesville's proposed thoroughfares depend on local officials actively using subdivision regulations. When a proposed subdivision conflicts with the thoroughfare plan, the municipalities should protect the transportation corridor. During the planning stage, the conflicting subdivision roads can be realigned and improved to match the thoroughfare plan. Developers who construct thoroughfare plan streets can benefit from local or state agency coordination. Developers who do not help build the thoroughfare plan improvements should dedicate the necessary road right-of-way. As a minimum, developers should reserve property needed for future road right-of-way.

Future Street Line Ordinances

Typically, by the time an existing road needs widening, houses and buildings line both sides of the road with no room to spare. Residents are understandably upset when widening the road swallows their entire yard, or worse their whole house. Businesses are equally upset when widening the road eliminates their only customer parking spaces, or their entire office. Building setbacks based on the thoroughfare plan recommendations reduce this problem.

As time passes, existing buildings age; some are renovated, others are replaced with newer buildings. Simultaneously, new buildings fill in the land between established buildings as zoning density limits increase. With adequate setback requirements, all the buildings constructed or renovated after thoroughfare plan adoption can have space for road widening. Ultimately, when the road is widened, fewer property owners will be negatively affected.

Zoning Ordinances

Zoning is a legal device available for implementing a land use plan. Most legislation today is based on the U.S. Department of Commerce 1924 Standard Zoning Enabling Act. Zoning involves dividing a municipality into districts and regulating each

district's population density, land use, open space, and other local concerns. Although zoning ordinances do not regulate street design or right-of-way, zoning directly influences transportation by protecting thoroughfare corridors and controlling transportation demand.

Zoning can control transportation demand by discouraging strip development zones along highways which create inefficient traffic flows. Isolated, single purpose businesses connected by highways congest the roads with people driving from one place to another for everyday activities. Driving to the grocery store for a loaf of bread and then driving to the post office to buy a roll of stamps often takes more driving time than shopping time. Zoning business areas for campus developments instead of strip development reduces automobile traffic by eliminating unnecessary automobile trips.

Zoning can also reduce automobile traffic by encouraging walking or bicycling. Just as shopping malls encourage people to walk from one shop to another, other developments can encourage people to walk from one business to another. Sidewalks should connect office complexes with lunch time eating and shopping areas. Neighborhoods, schools, libraries, and parks should also have connecting sidewalks and bicycle paths so people can choose their travel mode. Appendix H is a copy of the DOT Pedestrian Policy Guidelines.

Development Reviews

Development reviews save developers and municipalities the headache of dealing with avoidable transportation related problems. Reviews done at an early stage often save developers and municipalities money and increase the site's accessibility. Depending on how the development will affect existing and future traffic, different Department of Transportation specialists review the development plans.

Since the developers usually contact the municipality first, the municipality should advise them to contact the District Engineer. The District Engineer reviews all requests for driveway access to State maintained roads. If necessary, the District Engineer will forward development requests to other Department of Transportation

branches. If requested, the Statewide Planning Branch reviews all development requests on or near proposed thoroughfares and all requests which may prevent existing thoroughfares from being widened in the future. The Traffic Engineering and Highway Design Branches review large traffic generating developments like shopping centers, large industries, and fast food restaurants. The District Engineer can be contacted by writing:

District Engineer
N.C. Department of Transportation
P.O. Box 1107
Statesville, NC 28687

Official Maps

The North Carolina Statutes 136-44.50 through 136-44.53 are collectively designated as the "Roadway Corridor Official Map Act." This act gives state and municipal governments the power to protect transportation corridors based on official corridor maps. The official map which details the proposed thoroughfare alignment, the functional design, and the preliminary right-of-way boundaries is filed with the municipality Register of Deeds.

Roadway corridor maps may be adopted by the Department of Transportation or the municipality. The Department of Transportation makes official corridor maps only for fully controlled access facilities outside municipal jurisdiction. Municipalities must make official corridor maps for facilities without fully controlled access or facilities inside municipal jurisdictions. County Commissioners must approve municipal official corridor maps that extend beyond the municipality's extraterritorial jurisdiction.

Municipalities protect road corridors by prohibiting building permits or subdivision approvals on property within the corridor alignment. Because this places severe restrictions on private property rights, land owners are sometimes compensated by

having a reduced tax rate on any undeveloped or unsubdivided land within the transportation corridor.

Awkward legislation makes official corridor maps ineffective or inappropriate for most road corridors. Unless an environmental impact study or preliminary engineering study begins within one year of the official corridor map recording, the official map becomes legally void. If the environmental impact process is initiated, property restrictions only last up to three years, beginning when the developer requests permit or subdivision approval. Even if all other criteria are met, if federal funds are used, the environmental impact process chooses the road corridor with the least environmental damage, not necessarily the official map corridor.

The document Guidelines for Municipalities Considering Adoption of Roadway Corridor Official Maps has more details. Request this document from:

Program and Policy Branch
N.C. Department of Transportation
P.O. Box 25201
Raleigh, North Carolina 27611.

The Program and Policy Branch of the North Carolina Department of Transportation is responsible for coordinating Official Corridor Maps.

Regulation Coordination

Individually, thoroughfare plan adoption, subdivision regulations, zoning ordinances, development reviews, and official maps are all useful regulation tools. However, these regulations should be coordinated together to enhance their total effectiveness. Although each regulation applies to different items, each regulation can support other regulations. Table 4-1 lists the regulations which should be coordinated for each thoroughfare plan project. Municipalities with coordinated regulations can transfer severable development rights as bargaining chips to attract and influence development in the community's best interest.

Table 4-1: PROJECT COORDINATION					
Project	Thoroughfare Plan	Subdivision Ordinance	Future Street Line Ordinance	Zoning Ordinance	Development Review
MAJOR BYPASS THOROUGHFARES					
I-40 Widening	x		x		x
I-77 Widening	x		x		x
SMALL LOOP THOROUGHFARES					
Prop. East End Ave. Ext.	x	x		x	x
Garner Bagnal Blvd	x			x	x
MEDIUM LOOP THOROUGHFARES					
Old Mocksville Rd	x			x	x
Prop. SR 2206 Ext.	x	x		x	x
Prop. Greenbriar Rd	x	x		x	x
Prop. Third Creek Rd Ext.	x	x		x	x
Prop. Blue Bird Rd Ext.	x	x		x	x
Prop. Arey Rd Conn.	x	x		x	x
Prop. Airport Road Ext.	x			x	x
Prop. Cannon Rd Connector	x	x		x	x
Prop. Monticello Dr Ext.	x	x		x	x
Prop. Bradley Farm Rd Ext.	x	x		x	x
Prop. Museum Road Ext.	x	x		x	x
LARGE LOOP THOROUGHFARES					
Sullivan Farm Road Ext	x	x		x	x
Prop River Hill Rd Conn.	x	x		x	x
Prop. Moose Cave Rd Conn	x	x		x	x
Prop. Clements Rd Ext.	x	x		x	x
Old Mountain Rd	x			x	x
Prop. Murdock Rd Conn.	x	x		x	x
Prop. Murdock Rd Ext.	x	x		x	x

Table 4-1: PROJECT COORDINATION					
Project	Thoroughfare Plan	Subdivision Ordinance	Future Street Line Ordinance	Zoning Ordinance	Development Review
MAJOR RADIAL THOROUGHFARES					
US 21 Corridor	x			x	x
Mocksville Road Corridor	x			x	x
Harris Street Corridor	x	x		x	x
Buffalo Shoals Rd Corridor	x			x	x
NC 115 Corridor	x			x	x
CROSS-TOWN STREETS					
Race Street	x			x	x

FUNDING

Almost every city, town, and village from the mountains to the coast would like some type of road improvements. Each year communities request funding for everything from new Interstates to bicycle paths. Right-of-way costs consume up to half of the total project costs. When municipalities can actively protect transportation corridors, reduce right-of-way costs and save North Carolina tax payers millions of dollars, Board of Transportation members notice.

State and Federal Funding

The Department of Transportation, Division of Highways, is responsible for all state maintained roads outside municipal corporate limits. Inside municipal corporate limits, the Division of Highways is responsible for major streets and highways which carry primarily through traffic and traffic to major commercial, industrial, or governmental destinations. Division of Highways funds for the construction, maintenance, and improvements to the state road system can help implement thoroughfare plan recommendations.

North Carolina's Transportation Improvement Program (TIP) is a document which lists all major construction projects the Department of Transportation plans for the

next seven years. Similar to local Capital Improvement Program projects, TIP projects are matched with projected funding sources. Each year when the TIP is updated, completed projects are removed, programmed projects are advanced, and new projects are added (typically during the seventh year).

During annual TIP public hearings, counties and municipalities request projects to be put in the TIP. A Board of Transportation member reviews all of the project requests in a particular area of the state. Based on the technical feasibility, need, and available funding, the board member decides which projects will be included in the TIP. In addition to highway construction and widening, TIP funds are available for bridge replacement projects, highway safety projects, public transit projects, railroad projects, bicycle projects, and pedestrian projects.

Non-TIP funds are also available for special purposes. The Department of Transportation has separate funds for paving secondary roads, building industrial access roads, and miscellaneous spot improvements in small urban areas. To find out if any of these funds are available, contact the Board of Transportation member for Division 12, or the DOT Division Engineer for Division 12. The Federal Government provides useful block grants such as urban renewal grants and demonstration project funding. Table 4-2 lists possible funding sources for implementing particular projects. Used in coordination with thoroughfare planning, these other funding sources can make significant transportation improvements.

Table 4-2: PROJECT FUNDING SOURCES					
Project	Local Funds	TIP Funds	Secondary Road Funds	Industrial Access Funds	Small Urban Spot Improvement
MAJOR BYPASS THOROUGHFARES					
I-40 Widening		x			
I-77 Widening		x			
SMALL LOOP THOROUGHFARES					
Prop. East End Ave. Ext.		x			
Garner Bagnal Blvd		x			
MEDIUM LOOP THOROUGHFARES					
Old Mocksville Rd		x			
Prop. SR 2206 Ext.		x			
Prop. Greenbriar Rd		x			
Prop. Third Creek Rd Ext.		x			
Prop. Blue Bird Rd Ext.		x			
Prop. Arey Rd Conn.		x			
Prop. Airport Road Ext.		x			
Prop. Cannon Rd Conn.		x			
Prop. Monticello Dr Ext.		x			
Prop. Bradley Farm Rd Ext.		x			
Prop. Museum Road Ext.		x			
LARGE LOOP THOROUGHFARES					
Sullivan Farm Road Ext		x			
Prop River Hill Rd Conn.		x			
Prop. Moose Cave Rd Conn		x			
Prop. Clements Rd Ext.		x			
Old Mountain Rd		x			
Prop. Murdock Rd Conn.		x			
Prop. Murdock Rd Ext.		x			

Table 4-2: PROJECT FUNDING SOURCES					
Project	Local Funds	TIP Funds	Secondary Road Funds	Industrial Access Funds	Small Urban Spot Improvement
MAJOR RADIAL THOROUGHFARES					
US 21 Corridor		x			
Mocksville Road Corridor		x			
Harris Street Corridor		x			
Buffalo Shoals Rd Corridor		x			
NC 115 Corridor		x			
CROSS-TOWN STREETS					
Race Street		x			
MINOR THOROUGHFARES					
Cooper Farm Rd	x				
Free Nancy Ave	x				
Folger Drive	x				
Museum Road	x				

Appendix A: THOROUGHFARE PLANNING PRINCIPLES

Through time, villages grow into towns, towns grow into small cities, and small cities grow into large cities. All communities are dynamic places, constantly changing to keep pace with the increasing demands of today's citizens. Older buildings are replaced with newer more efficient structures. Agricultural land is converted to residential or commercial land. Low density zones are raised to high density zones to allow more people to use smaller parcels of land.

Only the roads remain much the same today as they were when they were originally built. True, today's engineered asphalt and concrete roads are far more efficient than the horse and buggy trails of yesterday. But, often the old horse and buggy trail alignment is the only alignment available for new highways. Once communities establish development patterns based on the existing roads, improving the alignment of the roads is difficult and sometimes impossible. Even after General Sherman burned Atlanta to the ground during the American Civil War, the city was still rebuilt using the original road corridors. Since the street system is permanent and expensive to build, policy makers established thoroughfare planning principles to guide transportation planning.

OBJECTIVES

The primary objective of thoroughfare planning is to provide a transportation system which can progressively develop to meet future travel demands. By developing the urban street system to keep pace with increasing traffic demands, street capacity can be maximized. Proper planning saves money by eliminating unnecessary improvements and minimizing the amount of land needed for streets.

Other thoroughfare planning objectives include:

- reducing transportation related environmental impacts, such as air, water, land, and noise pollution,
- reducing travel and transportation costs,
- reducing the cost of street improvements to the public through the coordination of subdivision and commercial developments with street developments,

- enabling local citizens to plan their actions with full knowledge of public intent,
- minimizing disruption and displacement of people and businesses through published long range street improvement plans, and
- increasing travel safety.

Thoroughfare planning objectives are achieved by improving the "operational efficiency" and the "system efficiency" of the street system. Improving the operational efficiency means increasing street capacity. Improving system efficiency means coordinating all the streets to support each other.

OPERATIONAL EFFICIENCY

A street's operational efficiency is the ability of the street to carry vehicles and people. A street's traffic capacity is the maximum number of vehicles which can pass a given location during a given time under the existing traffic conditions. Capacity is affected by the physical features of the roadway, nature of traffic, and weather. Three ways to improve street capacity are: physical roadway improvements, traffic flow management, and travel demand management.

Although physical road improvements are typically the first method people think of to increase capacity, physical improvements are very expensive and often politically controversial. Physical road improvements include: adding lanes, modifying intersections, improving vertical alignment, improving horizontal alignment, and eliminating roadside obstacles. By reducing the impedances to the main traffic flow caused by slow moving or turning vehicles, these improvements can significantly increase street capacity.

Traffic flow management improvements are another effective method for increasing street capacity. Although the political controversy can still be significant, traffic flow management generally costs less than physical road improvements. Traffic flow management improvements include:

- Controlling land access—A roadway with complete access control can often carry three times the traffic handled by a non-controlled access street with the same number of lanes.
- Removing parking—By removing parking, additional street width is available for traffic. The additional width can make another traffic lane or simply reduce traffic friction caused by parking vehicles.

- One-way operation—One-way streets can handle 20-50 percent more vehicles than two-way streets with the same number of lanes. One-way streets also improve traffic flow by decreasing potential traffic accidents and increasing intersection capacity.
- Minimizing traffic signals—Each traffic signal reduces the amount of time available for traffic to travel straight through an intersection.
- Spacing and coordinating traffic signals—A coordinated series of traffic signals minimizes the excessive stop-and-go operation common with closely spaced signalized intersections. With adequate spacing, coordinated signals increase street capacity by enabling traffic to flow at more uniform speeds.

Increasing concern over the world's diminishing natural resources is causing people to oppose highway improvements which take additional land and increase the total number of vehicles on the roads. Travel demand management increases street capacity by changing people's travel patterns, without building new roads and without significantly increasing environmental damage. The following policies are part of travel demand management:

- Encourage people to form carpools and vanpools. Increasing the number of people in each vehicle reduces the number of vehicles on the road and increases the people carrying capacity of the street system.
- Encourage people to walk. Statesville's pleasant community atmosphere and nice climate make walking fun, easy, and safe. Getting people out of their cars and on to the sidewalks changes auto-oriented business areas into friendly people-oriented community areas.
- Encourage people to ride bicycles. Every person who rides a bicycle instead of driving removes one car from the street network. In addition, bicycle riding does not create environmentally harmful automobile exhaust.
- Encourage industries, businesses, and institutions to stagger work hours or establish variable work hours for employees. Variable work hours spread the morning and afternoon peak travel over a longer time and increase the street's daily traffic capacity.
- Encourage land use development in a more pedestrian oriented manner. Avoid imprisoning citizens to automobiles for daily necessities. Allow citizens to choose whether to drive or not by providing appropriate sidewalks and bicycle facilities.

SYSTEM EFFICIENCY

Any system is only as good as each of its parts. For example, an automobile - no matter how expensive, no matter how powerful, or how high the speedometer scale - if one tire is flat, the car will not go fast. Street networks operate the same way. If one important link is missing, the whole network is burdened with unnecessary traffic. Every street has a particular functional classification which is important to the entire street system. An efficient system reduces travel distances, travel time, and travel costs.

Urban Functional Classification

Streets have two primary functions, traffic service and land access. Traffic service involves moving many high speed vehicles; land access involves slow moving vehicles turning into driveways. Combining slow turning vehicles with high speed traffic creates significant conflicts. The conflicts are not serious if both traffic service and land access demands are low. However, when traffic volumes increase, conflicts cause intolerable traffic congestion and serious safety hazards. Urban thoroughfare plans designate a functional system of streets which minimizes these problems. Streets are categorized as local access streets, minor thoroughfares, or major thoroughfares.

Local access streets provide access to abutting property. Depending on the land use, local streets may be subclassified as residential, commercial, or industrial. Local streets should not carry heavy volumes of traffic, and by design, they should discourage unnecessary traffic.

Minor thoroughfares connect local access streets to the major thoroughfares. They provide some access to abutting property, but they should be protected enough to allow a safe traffic flow to the major thoroughfares. Designing minor thoroughfares to serve limited areas protects them from excessive traffic.

Major thoroughfares are the primary traffic arteries of the town. Although they may serve abutting property, their principle function is to carry large volumes of traffic. Uncontrolled strip development significantly lowers their capacity because each driveway impedes the traffic flow. Similarly, on-street parking should be avoided because it also impedes the traffic flow.

IDEAL SMALL URBAN THOROUGHFARE PLAN

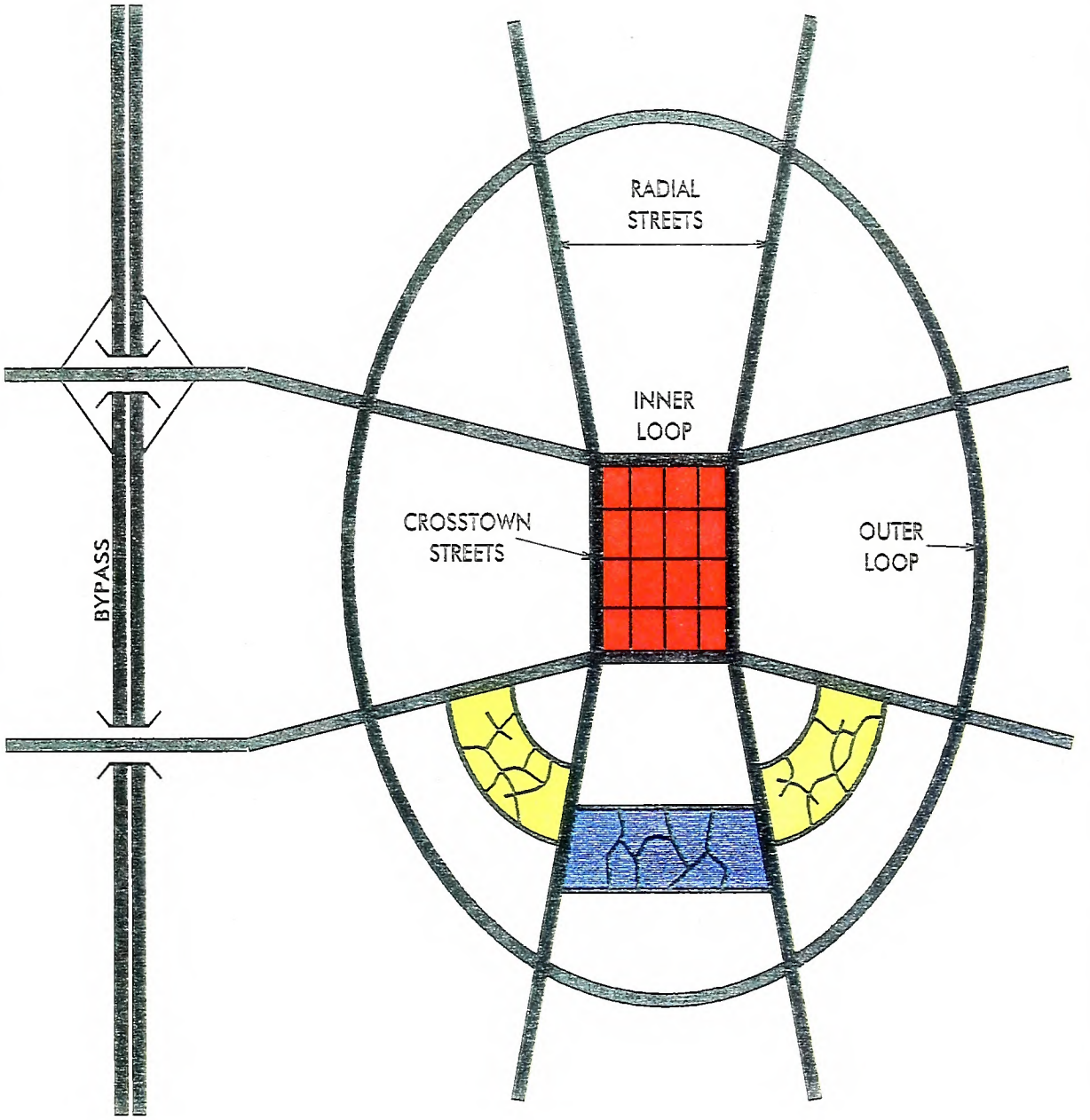


Figure A-1

Appendix B: TRAVEL DEFICIENCY ANALYSIS

The North Carolina Department of Transportation and the City of Statesville have invested valuable time and money in Statesville's street system over the past century. Development patterns along the streets in the local areas have established a unique community character. Developing a thoroughfare plan requires detailed information on this local character and other existing local conditions. Existing roads, population trends, traffic accidents, travel demand, and street capacity are all used for evaluating travel deficiencies.

EXISTING ROADS

Two interstates serve Statesville: I-77 providing access to the eastern United States; and I-40, providing access across the United States from North Carolina to California. Three US routes and two NC routes serve Statesville by providing direct access to the entire Intra-state Highway Network. US 21 parallels I-77 and extends from South Carolina to Virginia. US 64 and US 70 both traverse the state extending from the mountains to the coast. NC 90 connects Statesville to communities like Lenoir. NC 115 connects Statesville to communities like Mooresville to the south and Wilkesboro to the north. Figure B-1 illustrates the existing roads in Statesville.

POPULATION TRENDS

Population directly relates to automobile traffic in three different ways. First, the number of automobiles owned and driven in the planning area increases as the population increases. Second, the number of people driving into the planning area increases as the number of businesses in the planning area increases. Third, the number of trips passing through the planning area increases as the population of surrounding communities increases.

Based on information obtained form the North Carolina State Data Center, North Carolina is projected to grow at an average rate of 0.9% per year. Figure B-2 illustrates North Carolina's population trends and projections. Also based on North Carolina State Data Center, Iredell County's population is projected to grow 1% per year. Figure B-3 illustrates the population projections for Iredell County. Statesville's population has grown from 3,100 to 21,700 over the past ninety years. Because the thoroughfare planning area extends beyond the existing town limits, Statesville's planning area population is greater than the municipal population. Figure B-4 illustrates the planning area population projections.

TRAFFIC ACCIDENTS

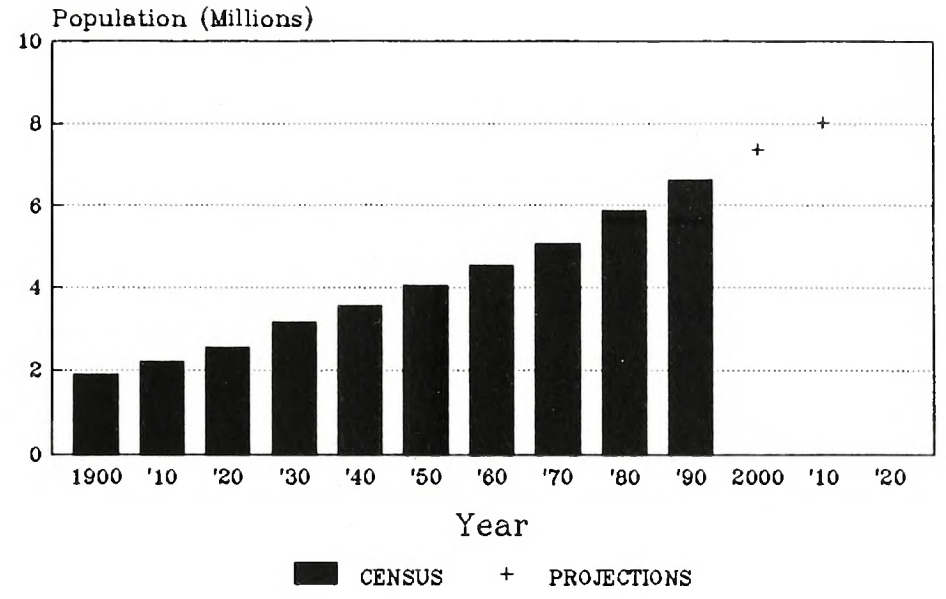
Traffic accidents cost all insured North Carolina citizens hundreds of dollars each year in automobile insurance premiums. Traffic accidents are attributed to three general causes: driver characteristics, vehicle characteristics, and environmental characteristics. Driver characteristics include driving ability, mental alertness, and reaction time. Vehicle characteristics include vehicle type, vehicle condition, and vehicle responsiveness. Environmental characteristics include road conditions, weather conditions, physical obstructions, and traffic conditions.

All traffic accidents listed in the Division of Motor Vehicles' files from January 1987 through December 1991 inside Statesville were reviewed. Table B-1 lists all intersections with twenty or more accidents during the five-year period and Figure B-5 illustrates the most frequent accident locations. In general, the highest number of accidents occurs around the I-40 and I-77 interchanges. The accident rate along these corridors should reduce when the interchanges are widened.

FIGURE B-1

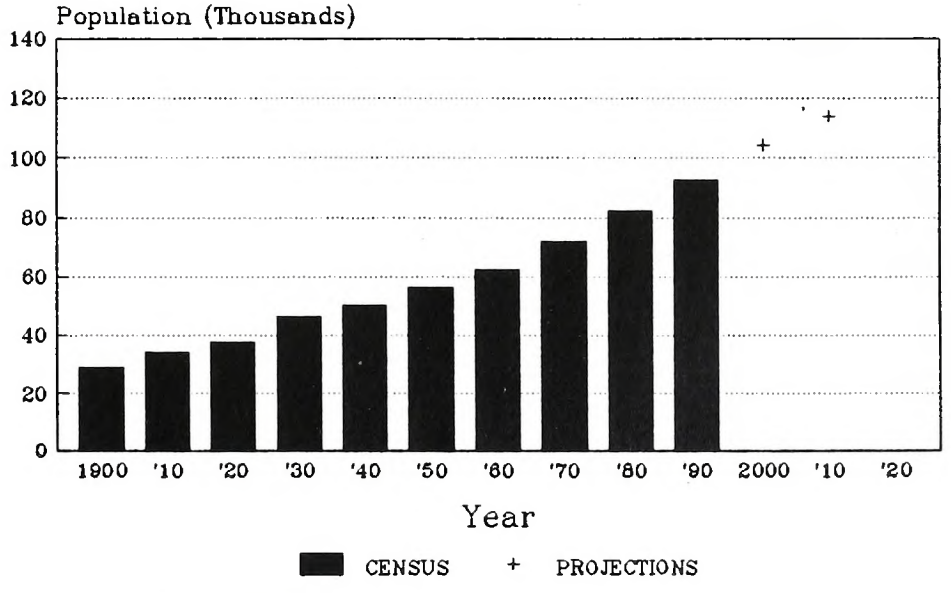
EXISTING STREET NETWORK

NC POPULATION TRENDS
Figure B–2



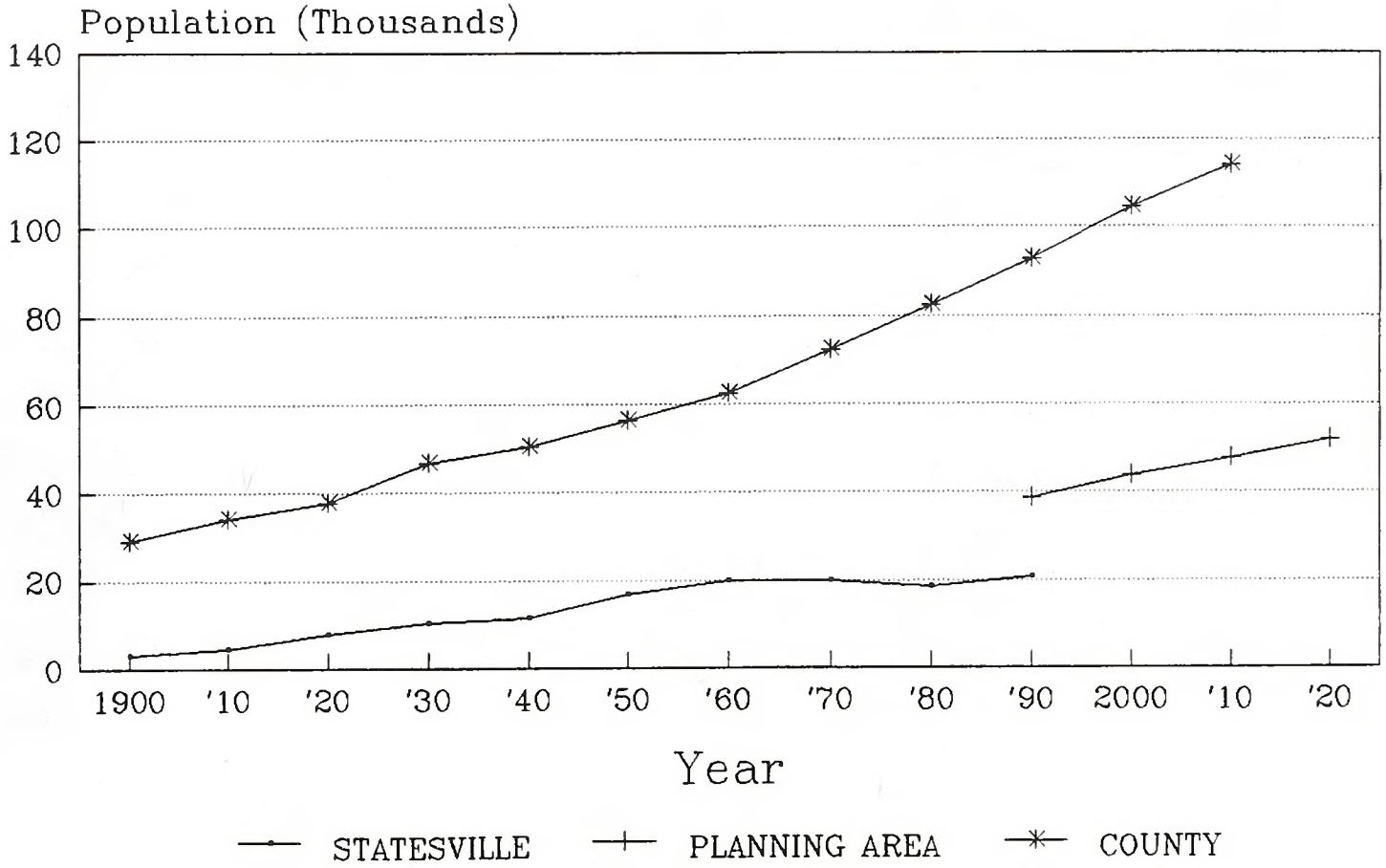
Source: US Census and State Data Center

IREDELL COUNTY POPULATION
Figure B–3



Sources: US Census, State Data Center

STATESVILLE POPULATION
Figure B-4



Source: NC State Data Center

FIGURE B–5

ACCIDENT LOCATIONS

1/87 – 12/91

HIGH = 61–100

MEDIUM = 41–60

LOW = 25–40

N

STATESVILLE

IREDELL COUNTY

NORTH CAROLINA

Table B-1: STATESVILLE ACCIDENT INVENTORY	
Intersections with 25 or more accidents from January 1987 through December 1991	
LOCATION	NUMBER OF ACCIDENTS
I-40 & I-77	60
I-40 & US 21 (Sullivan Rd)	83
I-40 & NC 90 (Front St.)	56
I-40 & NC 115 (Center St.)	28
I-40 & SR 1005 (Old Mountain Rd.)	57
I-40 & US 64 (Mocksville Rd.)	43
I-77 & Broad St.	99
I-77 & Monroe St.	96
I-77 & Salisbury Rd.	82
US 21 (Sullivan Rd.) & Carolina	62
US 21 (Sullivan Rd.) & Sherwood	25
US 21 (Sullivan Rd.) & SR 2171 / SR 1922	27
Barkley Rd. & Salisbury Rd.	28
Broad St. & East Side Dr.	42
Broad St. & Oakwood	30
Broad St. & Signal Hill	61
Broad St. & Tradd St.	25
Center St. & Front St.	30
Center St. & Water St.	26
East End Ave. & Davie Ave.	37
Front St. & Miller Ave.	48
Front St. & Mulberry St.	32
Front St. & Oakland Ave.	28
Front St. & Park	60
Raleigh Ave. & Shelton Ave.	32

TRAVEL DEMAND

Have you ever traveled on a busy Interstate and wondered where all the other thousands of cars were going? Travel demand is the technical term for analyzing this question. The name comes from the concept of people wanting to "travel" and "demanding" the road adequately handle all the traffic. Existing travel demand is reported as average daily traffic (ADT). Average daily traffic is the average amount of traffic which passes a particular point on the road in a typical day.

BRIDGES

Bridges are a significant part of all highway networks. Because bridges are so expensive to build and because they require such extensive engineering design, bridges need to be planned long before they are critical links. The North Carolina Department of Transportation inspects all bridges on the State Highway System and rates each bridge according to specific attributes. Bridge sufficiency ratings range from 0 to 100, with 100 being the best. Low sufficiency ratings do not mean bridges are unsafe, ratings simply compare all bridges relative to an ideal design and safety standard. Figure B-6 illustrates all bridges in Statesville with sufficiency ratings less than 50.

CAPACITY ANALYSIS

The maximum number of vehicles that can drive on a street at the same time is called the street's traffic capacity. Unlike the definite "capacity" of a glass holding water, the "capacity" of a street includes a variable element based on driver acceptance. People will not accept bumper-to-bumper traffic 24 hours a day, but they will accept bumper-to-bumper traffic for a short time. People accept different street capacities based on expected "level of service." Figure B-7 illustrates the traffic conditions for six typical levels of service:

1. Level-of-service "A" describes free flow operations. People can choose a desirable speed and maneuver easily in the traffic stream.
2. Level-of-service "B" describes almost free flowing operations. People can drive at posted speeds and are only slightly restricted maneuvering in the traffic stream.
3. Level-of-service "C" describes stable operations. Many vehicles have to drive at the same speed because of moderately restricted maneuverability. Motorists experience some tension from driving.
4. Level-of-service "D" describes acceptable congestion during rush hour. Most vehicles have to drive slightly below the posted speed because of restricted maneuverability. Motorists experience noticeable driving tension.

FIGURE B-6

BRIDGE SUFFICIENCY RATINGS

Bridge Location ●
Bridge Number #1
Sufficiency Rating 0.0

#116
29.2

#254
48.6

#113
33.1

#522
48.5

#178
30.9

#514
39.8

#179
35.9

#182
47.9

#305
27.0

#314
44.3

#38
49.1

#308
48.3

#27
24.7

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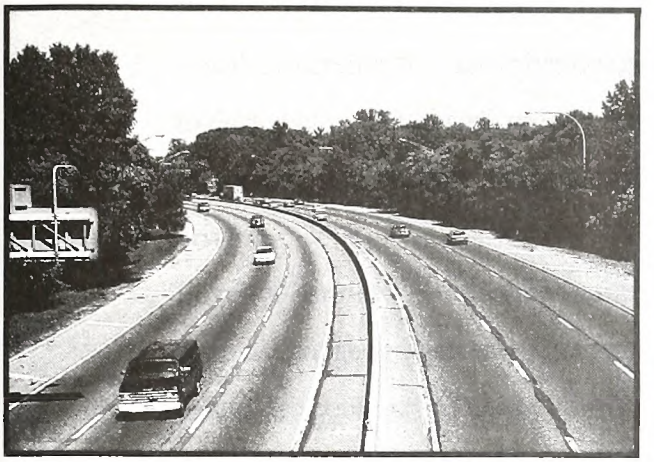
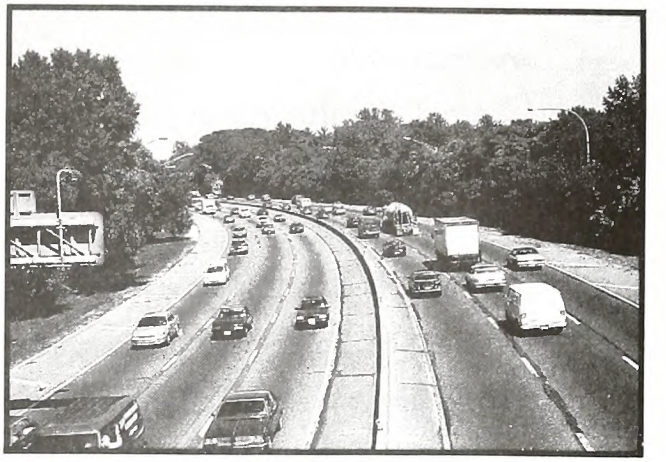
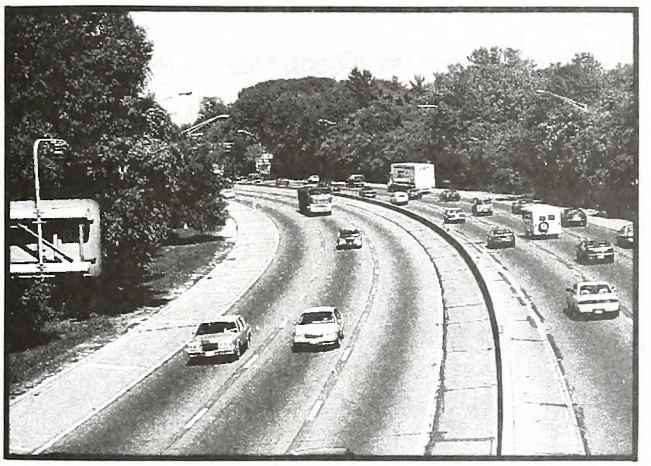
Source: 1994 Highway Capacity Manual



LOS A.



LOS D.



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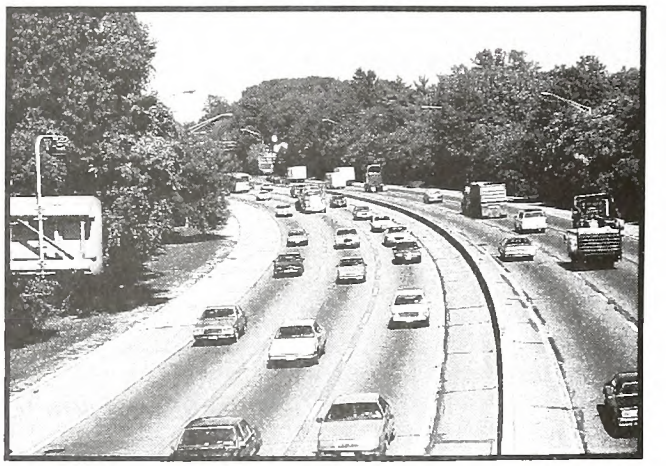
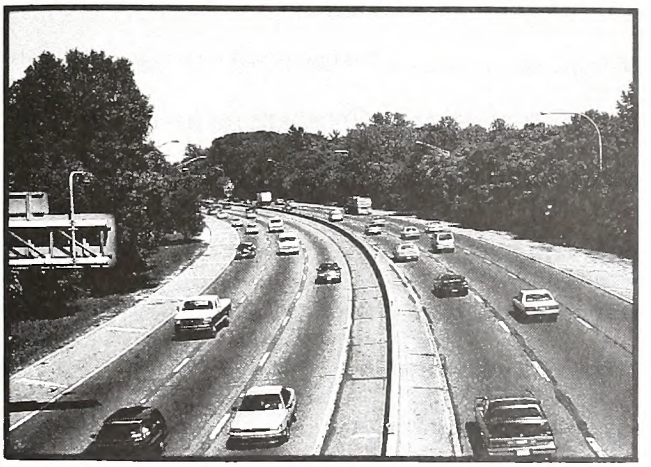
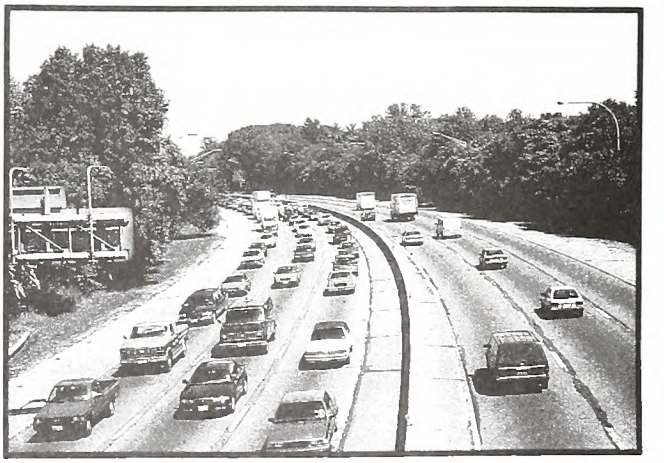


LOS E.



LOS C.



LOS F.

FIGURE B-7

LEVELS OF SERVICE

5. Level-of-service "E" describes congested rush hour conditions. All vehicles have to drive below the posted speed because maneuvering is very difficult. Tense motorists often become annoyed waiting at traffic signals and feel fatigued after driving.
6. Level-of-service "F" describes a traffic jam. Vehicles are subject to stop-and-go traffic because maneuvering is seemingly impossible. Intersection congestion and delays are common. Tense motorists, annoyed at traffic signals and irritated with the other "incompetent" drivers, feel angry after driving.

Thoroughfare plan recommendations are based on a minimum level-of-service D. Although most people prefer a better level of service, level-of-service D is the highest level of service people are willing to fund. Figure B-8 illustrates the 1992 and projected 2020 average daily traffic volumes. The 1992 traffic volumes are based on the existing street network, while the 2020 traffic volumes are based on the thoroughfare plan network.

TRAVEL DEFICIENCIES

In 1992, the following four roads are at or over capacity:

- Center Street -- From I-40 to Old Wilkesboro Road.
- Eastside Drive -- From Broad Street to Salisbury Road.
- Sullivan Road -- From Carolina Avenue to Glenway Drive.
- US 70 -- From Barkley Road to Shiloh Road.

Figure B-9 illustrates the roads over capacity in 1992. The roads over capacity in 1992 are based on Statesville's existing street network.

In 2020, the following sixteen road sections are expected to be over capacity:

- NC 90 - Little Farm Road to Northern City Limits.
- Amity Hill Road - Kimball Road to Mills Road.
- Center Street - Northern City Limits to I-40.
- Davie Avenue - Tradd Street to Valley Street.

- Eastside Drive - Broad Street to Salisbury Road.
- Garner Bagnal Boulevard - Newton Drive to I-77.
- Interstate 40 - Old Mountain Road to SR 2206.
- Interstate 77 - Amity Hill Road to US 21.
- NC 115 - Scotts Creek Road to Northern City Limits
- Old Mountain Road - I-40 to US 70.
- Salisbury Road - Monroe Street to Eastern City Limits.
- Sullivan Road - Northern City Limit to Davie Avenue.
- US 21 - Jane Sowers Road to Sullivan Road.
- US 64 - Greenbriar Road to Bell Farm Road.
- US 70 - Barkley Road to Bell Farm Road.

Figure B-10 illustrates the roads over capacity in 2020. The roads over capacity in 2020 are based on Statesville's existing street network and projected 2020 traffic volumes.

FIGURE B-8

LEGEND

Adopted by:

Existing & Predicted Traffic Volumes

Note: 1992 Volumes are based on the existing street network 2020 volumes are based on the thoroughfare plan network

1992 ADT
2020 ADT

Recommended Thoroughfare Plan

June 5, 1995

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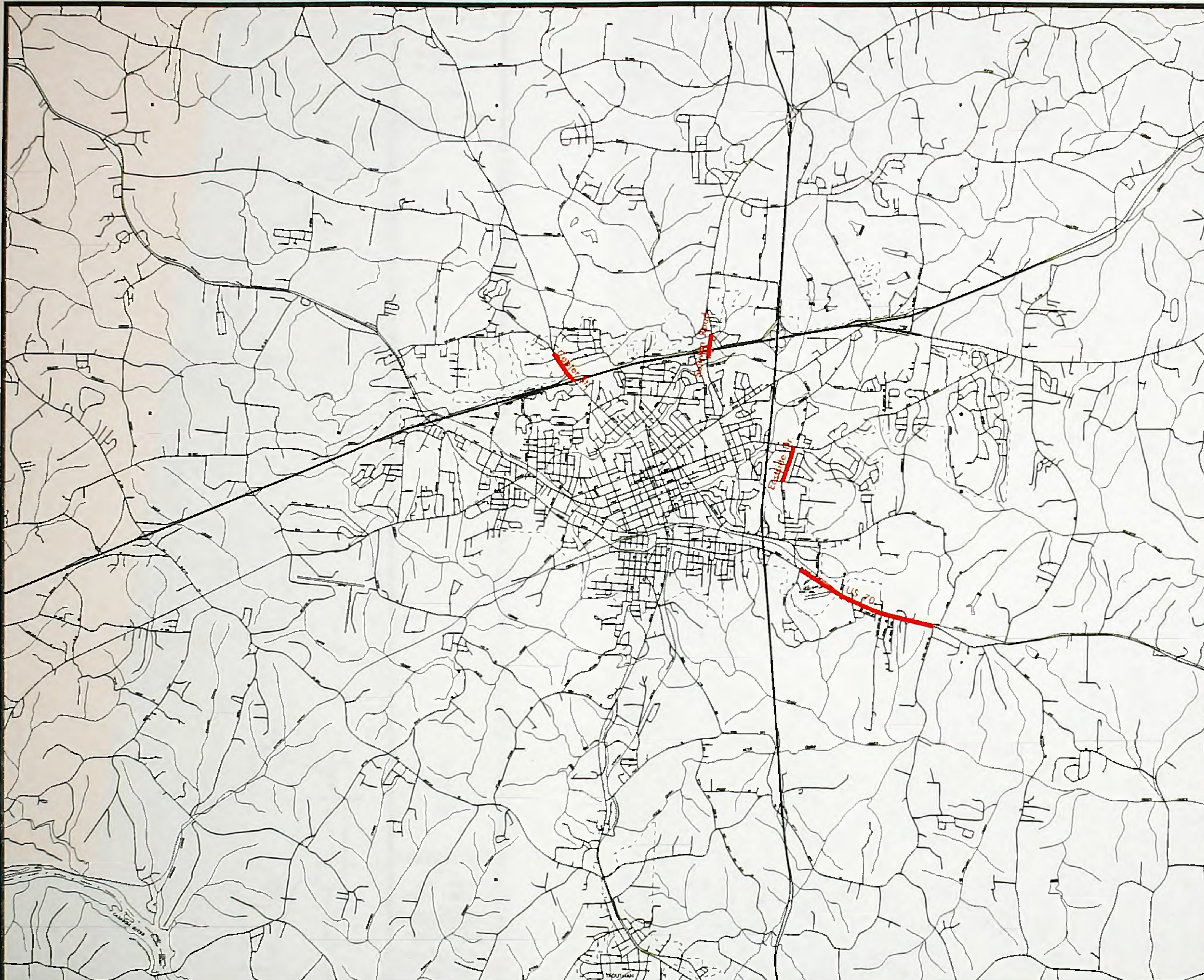
NORTH CAROLINA

FIGURE B-9

ROADS AT OR OVER CAPACITY IN 1992



Legend

at or over capacity

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FIGURE B-10

ROADS AT OR OVER CAPACITY IN 2020

Legend

at or over capacity

NC 90

NC 115

US 21

I-77

I-40

US 64

Old Mountain Rd.

Shiloh Church Rd.

Davie Ave.

Hanover Square Blvd.

Eastside Dr.

US 70

US 21

NC 115

Amity Hill Rd.

I-77

N

STATESVILLE

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Appendix C: COMPUTER MODEL DEVELOPMENT

Future travel demand was estimated with a "TRANPLAN" computer transportation model. The modeling process involved collecting socio-economic data, and then analyzing this data using the TRANPLAN software on a microcomputer. The modeling process uses three basic steps:

- collect socio-economic data,
- estimate through and external trips, and
- estimate internal trips.

Once the model accurately estimates the existing traffic patterns, socio-economic data projections were used in the computer model to estimate the 2020 traffic on the street network.

SOCIO-ECONOMIC DATA

Statesville is divided into 275 traffic analysis zones. The traffic analysis zones are based on homogeneous land-use characteristics. Figure C-1 illustrates the Statesville zone map. Table C-1 lists the 1993 trip generation data in each traffic analysis zone based on field data collection. Table C-2 lists the 2020 trip generation data in each traffic analysis zone. Table C-3 lists the 1993 employment data in each traffic analysis zone based on field data collection. Table C-4 lists the 2020 employment data in each traffic analysis zone.

FIGURE C-1

LEGEND

Corden Line

Zone Boundary

Screen Line

Zone Number 148

ZONE MAP

STATESVILLE

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NORTH CAROLINA

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
1	0	1	0	1	1	0	14	7
2	1	0	0	0	0	0	45	90
3	0	6	12	3	2	0	0	3
4	0	2	13	7	13	0	2	1
5	0	1	14	7	47	0	56	13
6	0	3	81	8	5	0	0	0
7	0	8	95	2	0	0	6	2
8	1	45	98	5	0	0	4	4
9	0	0	9	8	0	0	43	25
10	0	0	27	25	17	0	8	6
11	0	0	13	1	0	0	26	5
12	0	0	114	19	3	0	41	10
13	0	0	26	9	1	0	3	6
14	0	10	41	9	0	0	2	4
15	0	6	148	23	2	0	0	0
16	0	0	59	9	0	0	3	3
17	0	0	69	53	9	0	3	3
18	1	8	89	19	0	0	0	1
19	1	4	0	1	0	0	0	0
20	2	3	7	2	0	0	0	0
21	1	5	7	2	0	0	0	0
22	0	1	11	1	1	0	1	0
23	0	4	82	10	12	0	2	0
24	1	3	2	1	0	0	0	1
25	2	2	4	1	0	0	0	0
26	0	34	6	0	2	0	5	3
27	0	63	90	6	1	0	12	0
28	0	3	1	0	0	0	3	1
29	0	27	45	4	0	0	1	0
30	0	4	35	6	0	0	0	0
31	0	2	14	3	0	0	0	0
32	0	0	4	10	4	0	0	0
33	0	0	115	10	3	0	2	0
34	0	3	14	8	0	0	1	0

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
35	0	1	5	0	0	0	1	0
36	2	3	2	0	0	0	0	0
37	0	3	13	28	0	0	0	0
38	0	1	45	12	4	0	24	0
39	0	1	58	10	0	0	0	0
40	0	5	38	9	7	0	1	0
41	0	0	53	3	0	0	1	0
42	0	0	17	11	0	0	1	0
43	0	0	0	0	0	0	27	62
44	0	5	85	11	1	0	0	1
45	0	0	11	10	0	0	11	15
46	0	2	65	25	0	0	23	8
47	0	0	26	2	0	0	0	2
48	0	1	43	8	0	0	0	0
49	1	1	22	37	0	0	0	41
50	0	0	54	15	2	0	18	18
51	0	1	31	25	2	0	2	3
52	0	1	41	83	2	0	0	0
53	0	0	31	13	3	0	13	4
54	0	0	31	12	2	0	29	1
55	0	0	20	9	1	0	3	0
56	0	0	15	15	0	0	0	0
57	0	1	17	5	0	0	2	1
58	0	0	76	16	8	0	12	2
59	0	1	15	7	1	0	0	0
60	0	1	32	13	1	0	9	3
61	0	0	18	2	1	0	4	2
62	0	0	4	3	1	0	1	4
63	0	0	20	1	1	0	0	1
64	0	0	15	5	1	0	0	3
65	0	1	45	15	0	0	0	2
66	0	1	32	4	0	0	3	3
67	0	1	4	2	2	0	0	0
68	0	0	8	4	0	0	2	5

Table C-1:1993 TRIP GENERATION DATA

ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
69	0	0	13	3	15	0	3	11
70	0	0	37	7	9	0	0	1
71	0	0	17	17	66	0	1	4
72	0	0	34	17	15	0	0	1
73	0	1	7	16	0	0	0	0
74	0	0	6	4	2	0	0	0
75	0	0	7	58	3	0	0	0
76	0	0	12	17	1	0	0	0
77	0	0	41	25	3	0	0	1
78	0	1	52	15	1	0	0	0
79	0	3	63	7	11	0	0	2
80	0	1	6	3	1	0	0	3
81	0	0	6	15	33	0	0	2
82	0	0	15	42	0	0	0	0
83	0	10	18	11	5	0	0	0
84	0	3	49	16	3	0	0	0
85	0	3	8	3	2	0	0	0
86	0	0	25	6	0	0	0	2
87	4	15	16	5	8	0	0	3
88	0	1	44	0	0	0	0	0
89	0	0	6	0	0	0	0	0
90	0	1	37	0	0	0	0	0
91	0	0	10	1	0	0	0	0
92	0	2	18	0	0	0	0	0
93	0	10	63	11	1	0	0	0
94	0	4	77	14	0	0	1	1
95	0	7	14	17	0	0	0	0
96	0	18	52	8	1	0	0	0
97	0	4	12	6	2	0	2	0
98	0	2	21	1	0	36	0	0
99	0	2	12	3	2	0	7	6
100	0	4	4	4	0	0	1	0
101	0	0	20	20	20	0	1	0
102	0	0	15	21	3	0	0	0

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
103	0	0	11	16	6	0	0	0
104	0	0	1	0	0	0	6	6
105	0	0	9	5	2	0	0	1
106	0	0	28	6	1	0	0	0
107	0	0	8	2	0	0	3	1
108	0	1	37	9	1	0	0	1
109	0	1	14	4	0	0	0	1
110	0	2	16	4	0	0	0	0
111	0	0	6	16	0	0	0	0
112	0	1	15	19	1	0	0	0
113	0	3	52	3	0	0	47	18
114	0	0	0	0	0	0	3	5
115	0	1	6	0	0	0	49	73
116	0	2	35	6	0	0	0	4
117	1	4	89	57	40	0	35	8
118	0	2	60	16	2	0	0	1
119	0	0	1	0	0	0	44	19
120	1	0	10	6	0	0	0	0
121	0	1	27	21	0	0	0	0
122	0	0	80	78	0	0	27	2
123	0	0	1	7	2	0	8	0
124	0	12	44	10	0	0	0	0
125	0	2	19	1	0	0	1	4
126	0	0	2	0	0	0	4	2
127	0	0	1	0	2	0	17	26
128	0	1	18	20	15	0	0	0
129	0	0	36	25	0	0	17	7
130	0	0	38	10	3	0	1	34
131	0	1	73	33	8	0	3	2
132	0	0	8	52	6	0	0	1
133	0	0	8	10	0	0	0	4
134	54	22	1	0	0	0	0	0
135	82	0	0	0	0	0	0	0
136	22	17	45	0	0	0	0	0

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
137	1	15	10	0	0	0	0	0
138	0	97	30	2	0	0	3	2
139	3	64	2	0	0	0	0	0
140	2	9	10	0	0	0	7	7
141	62	19	1	0	0	0	0	0
142	42	3	0	0	0	0	0	0
143	9	38	92	16	4	0	11	5
144	0	27	86	0	0	0	0	0
145	0	7	181	11	0	0	0	0
146	0	0	96	88	1	0	0	12
147	0	0	1	12	0	0	0	3
148	0	0	36	1	0	60	11	13
149	0	0	173	2	0	0	9	3
150	0	0	0	1	1	0	0	0
151	0	0	5	1	2	0	10	7
152	0	3	257	0	0	45	0	1
153	0	69	81	0	0	0	0	0
154	0	0	4	6	6	0	1	1
155	0	0	25	7	0	0	9	6
156	0	0	59	9	1	0	0	0
157	0	0	9	48	14	0	0	0
158	0	1	58	15	2	0	1	13
159	0	4	24	0	0	0	1	9
160	2	58	75	0	0	0	0	0
161	13	24	51	1	0	0	0	0
162	2	13	64	12	0	0	0	0
163	0	15	382	28	0	0	0	0
164	0	0	0	0	0	0	4	1
165	0	0	0	0	4	0	1	0
166	0	0	0	16	3	0	0	0
167	0	0	18	27	2	0	0	0
168	0	0	61	37	1	0	0	0
169	0	0	19	25	1	0	0	0
170	0	0	8	71	1	0	0	0

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
171	0	0	5	72	1	0	0	4
172	0	0	7	22	5	0	5	2
173	0	0	1	0	0	0	0	0
174	0	0	7	5	0	0	2	6
175	0	1	10	5	5	0	0	4
176	0	2	15	103	0	0	0	7
177	0	0	12	65	8	0	2	1
178	0	0	0	4	12	0	0	6
179	0	0	0	18	18	0	4	11
180	0	0	1	25	37	0	0	1
181	0	0	0	55	84	0	0	0
182	0	1	8	28	52	0	1	0
183	0	0	2	6	6	0	10	3
184	0	0	10	6	5	0	68	8
185	0	0	5	56	9	0	61	117
186	0	0	68	150	19	0	0	0
187	0	0	4	149	4	0	0	11
188	0	0	3	37	0	0	7	2
189	0	0	59	18	0	0	0	1
190	0	2	2	15	0	0	0	0
191	0	0	46	41	1	0	0	3
192	0	0	54	4	0	0	0	0
193	0	6	49	1	0	0	0	0
194	0	1	15	21	0	0	0	0
195	0	0	0	0	0	0	9	9
196	0	0	0	0	0	0	3	8
197	0	0	4	37	4	0	10	3
198	0	0	1	44	14	0	5	4
199	0	0	0	0	0	0	1	4
200	0	0	49	1	0	0	62	21
201	0	0	11	4	0	0	4	0
202	0	0	6	11	194	0	0	0
203	0	0	43	63	3	0	0	0
204	2	15	55	0	0	0	0	2

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
205	0	22	102	60	6	0	0	0
206	0	9	56	3	1	0	0	0
207	0	0	0	0	0	0	3	4
208	0	12	96	11	1	0	0	0
209	1	27	137	6	0	0	2	11
210	0	0	47	76	21	0	0	55
211	2	13	54	40	30	0	1	0
212	0	44	32	0	0	0	0	0
213	0	45	67	1	0	0	1	1
214	0	1	76	29	4	0	0	0
215	0	45	133	2	0	0	2	1
216	0	2	18	0	0	0	2	0
217	1	24	43	5	0	0	0	0
218	0	7	4	1	0	0	0	5
219	7	29	36	2	0	0	3	2
220	6	53	58	9	0	0	1	6
221	0	0	15	25	0	0	3	10
222	0	2	12	8	0	0	2	10
223	2	16	36	10	0	0	0	4
224	0	5	64	75	0	0	0	0
225	0	1	80	26	0	0	0	2
226	0	0	51	19	0	0	0	0
227	0	1	127	31	0	0	1	1
228	0	0	94	26	0	0	2	2
229	0	0	84	24	0	0	0	1
230	0	0	48	11	0	0	0	28
231	0	0	13	21	0	0	0	0
232	0	0	14	18	6	0	6	14
233	0	0	0	21	10	0	15	21
234	0	0	0	16	2	0	1	4
235	0	0	0	14	9	0	0	0
236	0	0	22	72	14	0	8	2
237	0	0	12	37	7	0	0	7
238	0	0	3	23	3	0	0	0

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
239	0	0	1	37	0	0	0	0
240	0	0	1	39	6	0	0	0
241	0	0	6	7	0	0	47	36
242	0	0	5	109	0	0	8	7
243	0	0	0	0	0	0	0	0
244	0	0	4	13	4	0	4	12
245	0	0	16	6	2	0	10	20
246	0	0	9	17	11	0	4	12
247	0	0	1	0	0	0	1	1
248	0	0	4	13	1	0	0	2
249	0	0	19	27	3	0	3	7
250	0	0	49	7	0	0	0	0
251	0	0	48	10	0	0	4	0
252	0	4	61	24	0	0	0	0
253	0	3	18	1	0	0	0	3
254	0	3	134	3	1	0	0	0
255	0	16	24	1	0	0	0	0
256	0	3	41	6	0	0	0	9
257	0	7	5	7	0	63	1	12
258	0	1	4	10	0	0	25	34
259	0	2	19	41	0	0	0	1
260	0	0	12	2	0	0	2	2
261	0	2	28	22	1	0	2	3
262	0	0	15	19	1	0	2	5
263	0	0	4	4	0	12	1	0
264	0	0	4	10	21	0	0	12
265	0	0	7	29	10	0	0	5
266	0	0	8	28	5	0	0	0
267	0	0	7	25	3	0	0	0
268	0	0	6	12	2	0	4	47
269	0	1	2	12	2	0	5	33
270	0	0	9	22	2	0	41	4
271	0	0	6	11	0	0	1	10
272	0	2	18	2	0	0	0	21

Table C-1:1993 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
273	2	0	0	1	0	0	1	44
274	0	0	0	1	0	0	3	24
275	0	1	9	16	0	0	3	31

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
1	0	6	0	6	6	0	18	9
2	16	0	0	0	0	0	59	117
3	0	31	62	15	10	0	0	6
4	0	3	19	10	19	0	3	1
5	0	2	26	13	88	0	90	21
6	0	5	131	13	8	0	0	0
7	0	13	149	3	0	0	10	3
8	1	50	108	6	0	0	5	5
9	0	0	17	15	0	0	56	33
10	0	0	33	30	21	0	10	8
11	0	0	27	2	0	0	34	7
12	0	0	127	21	3	0	53	13
13	0	0	37	13	1	0	4	8
14	0	13	51	11	0	0	3	5
15	0	9	227	35	3	0	0	0
16	0	0	111	17	0	0	5	5
17	0	0	101	77	13	0	5	5
18	2	12	135	29	0	0	0	2
19	4	14	0	4	0	0	0	0
20	4	6	15	4	0	0	0	0
21	2	10	14	4	0	0	0	0
22	0	5	58	5	5	0	2	0
23	0	6	128	16	19	0	3	0
24	15	44	29	15	0	0	0	2
25	23	23	46	12	0	0	0	0
26	0	46	8	0	3	0	7	4
27	0	100	143	10	2	0	23	0
28	0	74	25	0	0	0	6	2
29	0	61	101	9	0	0	2	0
30	0	12	109	19	0	0	0	0
31	0	12	84	18	0	0	0	0
32	0	0	17	43	17	0	0	0
33	0	0	169	15	4	0	3	0

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
34	0	5	22	13	0	0	1	0
35	0	4	18	0	0	0	1	0
36	6	9	6	0	0	0	0	0
37	0	4	17	38	0	0	0	0
38	0	3	114	30	10	0	46	0
39	0	2	138	24	0	0	0	0
40	0	13	99	23	18	0	2	0
41	0	0	67	4	0	0	1	0
42	0	0	26	17	0	0	1	0
43	0	0	0	0	0	0	43	99
44	0	6	98	13	1	0	0	1
45	0	0	42	39	0	0	18	24
46	0	4	132	51	0	0	44	15
47	0	0	114	9	0	0	0	4
48	0	1	55	10	0	0	0	0
49	2	2	44	73	0	0	0	66
50	0	0	100	28	4	0	29	29
51	0	2	63	50	4	0	3	5
52	0	2	72	145	3	0	0	0
53	0	0	41	17	4	0	17	5
54	0	0	96	37	6	0	55	2
55	0	0	60	27	3	0	5	0
56	0	0	23	23	0	0	0	0
57	0	2	28	8	0	0	3	1
58	0	0	87	18	9	0	16	3
59	0	2	24	11	2	0	0	0
60	0	1	42	17	1	0	12	4
61	0	0	31	3	2	0	5	3
62	0	0	34	26	9	0	2	6
63	0	0	75	4	4	0	0	2
64	0	0	58	19	4	0	0	5
65	0	3	115	38	0	0	0	4
66	0	4	114	14	0	0	6	6
67	0	8	31	15	15	0	0	0

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
68	0	0	48	24	0	0	3	8
69	0	0	19	4	22	0	4	14
70	0	0	47	9	12	0	0	1
71	0	0	20	20	76	0	1	5
72	0	0	42	21	18	0	0	1
73	0	2	11	26	0	0	0	0
74	0	0	14	9	5	0	0	0
75	0	0	9	71	4	0	0	0
76	0	0	18	26	2	0	0	0
77	0	0	77	47	6	0	0	2
78	0	2	97	28	2	0	0	0
79	0	4	74	8	13	0	0	3
80	0	2	14	7	2	0	0	4
81	0	0	13	32	70	0	0	3
82	0	0	31	86	0	0	0	0
83	0	24	43	26	12	0	0	0
84	0	6	90	30	6	0	0	0
85	0	6	16	6	4	0	0	0
86	0	0	37	9	0	0	0	3
87	12	45	48	15	24	0	0	6
88	0	3	137	0	0	0	0	0
89	0	0	101	0	0	0	0	0
90	0	4	130	0	0	0	0	0
91	0	0	65	6	0	0	0	0
92	0	12	104	0	0	0	0	0
93	0	17	107	19	2	0	0	0
94	0	5	89	16	0	0	1	1
95	0	10	20	24	0	0	0	0
96	0	21	62	10	1	0	0	0
97	0	7	20	10	3	0	3	0
98	0	3	26	1	0	45	0	0
99	0	8	50	12	8	0	11	10
100	0	36	36	36	0	0	2	0
101	0	0	52	52	52	0	2	0

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
102	0	0	38	53	8	0	0	0
103	0	0	31	45	17	0	0	0
104	0	0	16	0	0	0	8	8
105	0	0	17	10	4	0	0	1
106	0	0	76	16	3	0	0	0
107	0	0	56	14	0	0	5	2
108	0	1	49	12	1	0	0	1
109	0	2	25	7	0	0	0	1
110	0	3	27	7	0	0	0	0
111	0	0	10	27	0	0	0	0
112	0	1	21	27	1	0	0	0
113	0	4	65	4	0	0	61	23
114	0	0	0	0	0	0	4	7
115	0	3	19	0	0	0	64	95
116	0	3	47	8	0	0	0	5
117	1	4	96	61	43	0	46	10
118	0	2	71	19	2	0	0	1
119	0	0	16	0	0	0	57	25
120	2	0	19	11	0	0	0	0
121	0	1	35	27	0	0	0	0
122	0	0	88	85	0	0	35	3
123	0	0	3	18	5	0	10	0
124	0	15	54	12	0	0	0	0
125	0	3	32	2	0	0	1	5
126	0	0	17	0	0	0	5	3
127	0	0	6	0	12	0	22	34
128	0	2	38	42	32	0	0	0
129	0	0	45	31	0	0	22	9
130	0	0	49	13	4	0	1	44
131	0	1	83	37	9	0	4	3
132	0	0	20	127	15	0	0	2
133	0	0	15	18	0	0	0	5
134	23	73	39	2	0	0	0	0
135	8	89	0	0	0	0	0	0

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
136	1	25	20	53	0	0	0	0
137	0	2	24	16	0	0	0	0
138	0	0	142	44	3	0	5	3
139	0	4	78	2	0	0	0	0
140	0	3	15	17	0	0	9	9
141	19	54	22	1	0	0	0	0
142	17	39	4	0	0	0	0	0
143	12	52	127	22	6	0	18	8
144	0	41	132	0	0	0	0	0
145	0	10	267	16	0	0	0	0
146	0	0	104	95	1	0	0	16
147	0	0	2	26	0	0	0	4
148	0	0	42	1	0	69	14	17
149	0	0	188	2	0	0	12	4
150	0	0	0	49	49	0	0	0
151	0	0	14	3	6	0	13	9
152	0	4	337	0	0	59	0	2
153	0	97	113	0	0	0	0	0
154	0	0	8	12	12	0	1	1
155	0	0	99	28	0	0	17	11
156	0	0	72	11	1	0	0	0
157	0	0	11	58	17	0	0	0
158	0	2	131	34	5	0	2	25
159	0	6	37	0	0	0	1	12
160	2	64	83	0	0	0	0	0
161	15	28	60	1	0	0	0	0
162	2	15	75	14	0	0	0	0
163	0	16	395	29	0	0	0	0
164	0	0	0	0	0	0	5	1
165	0	0	0	0	19	0	1	0
166	0	0	0	29	5	0	0	0
167	0	0	24	36	3	0	0	0
168	0	0	70	43	1	0	0	0
169	0	0	25	33	1	0	0	0

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
170	0	0	10	84	1	0	0	0
171	0	0	6	86	1	0	0	5
172	0	0	19	61	14	0	8	3
173	0	0	16	0	0	0	0	0
174	0	0	62	45	0	0	4	11
175	0	4	39	19	19	0	0	6
176	0	4	27	185	0	0	0	13
177	0	0	20	111	14	0	3	2
178	0	0	0	8	23	0	0	8
179	0	0	0	26	26	0	5	14
180	0	0	1	31	46	0	0	1
181	0	0	0	61	93	0	0	0
182	0	2	13	47	87	0	2	0
183	0	0	11	32	32	0	16	5
184	0	0	55	33	28	0	129	15
185	0	0	6	68	11	0	79	152
186	0	0	72	159	20	0	0	0
187	0	0	4	163	4	0	0	14
188	0	0	4	51	0	0	9	3
189	0	0	70	22	0	0	0	1
190	0	12	12	90	0	0	0	0
191	0	0	96	85	2	0	0	6
192	0	0	142	11	0	0	0	0
193	0	12	102	2	0	0	0	0
194	0	1	21	30	0	0	0	0
195	0	0	0	0	0	0	12	12
196	0	0	0	0	0	0	4	10
197	0	0	5	49	5	0	13	4
198	0	0	1	55	18	0	7	5
199	0	0	0	0	0	0	1	5
200	0	0	64	1	0	0	81	27
201	0	0	22	8	0	0	5	0
202	0	0	6	12	208	0	0	0
203	0	0	49	72	3	0	0	0

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
204	2	18	66	0	0	0	0	3
205	0	24	110	65	6	0	0	0
206	0	11	68	4	1	0	0	0
207	0	0	0	0	0	0	4	5
208	0	14	108	12	1	0	0	0
209	1	29	149	7	0	0	3	14
210	0	0	52	84	23	0	0	72
211	2	14	60	44	33	0	1	0
212	0	53	38	0	0	0	0	0
213	0	51	76	1	0	0	1	1
214	0	1	86	33	5	0	0	0
215	0	49	144	2	0	0	3	1
216	0	4	32	0	0	0	3	0
217	1	29	52	6	0	0	0	0
218	0	16	9	2	0	0	0	7
219	8	35	43	2	0	0	4	3
220	9	78	86	13	0	0	2	10
221	0	0	21	34	0	0	4	13
222	0	3	20	13	0	0	3	13
223	2	20	44	12	0	0	0	5
224	0	6	71	83	0	0	0	0
225	0	1	91	30	0	0	0	3
226	0	0	62	23	0	0	0	0
227	0	1	139	34	0	0	1	1
228	0	0	106	29	0	0	3	3
229	0	0	96	27	0	0	0	1
230	0	0	60	14	0	0	0	36
231	0	0	19	30	0	0	0	0
232	0	0	20	25	8	0	8	18
233	0	0	0	31	15	0	20	27
234	0	0	0	29	4	0	1	5
235	0	0	0	23	15	0	0	0
236	0	0	25	82	16	0	10	3
237	0	0	15	47	9	0	0	9

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
238	0	0	5	35	5	0	0	0
239	0	0	1	52	0	0	0	0
240	0	0	1	52	8	0	0	0
241	0	0	13	15	0	0	61	47
242	0	0	6	123	0	0	10	9
243	0	0	0	0	0	0	0	0
244	0	0	7	22	7	0	5	16
245	0	0	26	10	3	0	13	26
246	0	0	13	24	15	0	5	16
247	0	0	16	0	0	0	1	1
248	0	0	7	24	2	0	0	3
249	0	0	25	35	4	0	4	9
250	0	0	62	9	0	0	0	0
251	0	0	60	13	0	0	5	0
252	0	5	71	28	0	0	0	0
253	0	5	30	2	0	0	0	4
254	0	3	148	3	1	0	0	0
255	0	22	33	1	0	0	0	0
256	0	4	53	8	0	0	0	12
257	0	8	6	8	0	75	1	16
258	0	2	8	20	0	0	33	44
259	0	2	24	51	0	0	0	1
260	0	0	25	4	0	0	3	3
261	0	3	36	28	1	0	3	4
262	0	0	21	27	1	0	3	7
263	0	0	7	7	0	21	1	0
264	0	0	6	14	30	0	0	16
265	0	0	9	38	13	0	0	7
266	0	0	11	38	7	0	0	0
267	0	0	10	36	4	0	0	0
268	0	0	11	21	4	0	5	61
269	0	2	4	23	4	0	7	43
270	0	0	13	32	3	0	53	5
271	0	0	11	21	0	0	1	13

Table C-2 2020 TRIP GENERATION DATA								
ZONE	DWELLING UNIT TRIP GENERATION CLASSIFICATION						COMMERCIAL VEHICLES	
#	EXE	AA	AVG	BAV	POOR	SPEC	TRUCKS	CARS
272	0	3	30	3	0	0	0	27
273	12	0	0	6	0	0	1	57
274	0	0	0	16	0	0	4	31
275	0	2	14	25	0	0	4	40

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
1	85	4	10	0	0
2	882	141	0	162	0
3	0	8	0	614	0
4	8	0	0	1	0
5	746	0	0	55	0
6	0	0	0	0	0
7	0	57	0	4	0
8	17	7	0	4	0
9	70	4	0	8	363
10	54	6	0	33	0
11	10	10	4	149	3
12	721	448	470	81	15
13	1	7	0	9	21
14	6	10	35	14	0
15	0	6	0	5	0
16	41	45	3	20	0
17	7	19	5	8	0
18	1	0	0	3	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	8	0
23	4	0	0	0	0
24	0	0	0	7	0
25	0	0	0	0	0
26	9	15	146	26	1
27	0	7	25	44	0
28	0	0	0	20	48
29	0	0	0	4	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	6	0
33	0	0	0	3	0
34	0	0	0	3	0

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
35	0	0	0	3	0
36	0	0	0	0	0
37	0	0	0	0	0
38	14	10	0	23	0
39	0	0	0	0	0
40	0	0	0	1	0
41	0	1	0	0	0
42	0	38	0	2	0
43	218	23	0	50	0
44	0	20	0	0	0
45	517	74	0	62	0
46	25	108	0	18	0
47	3	0	0	0	0
48	0	0	0	0	0
49	0	0	2	0	89
50	38	8	17	1	0
51	6	0	3	4	0
52	5	4	1	1	0
53	12	7	8	6	0
54	45	60	177	24	0
55	0	0	0	3	0
56	0	0	0	0	0
57	0	0	0	86	0
58	37	5	0	8	0
59	0	0	0	0	0
60	20	10	0	225	9
61	2	2	7	12	8
62	3	4	0	40	0
63	2	0	0	1	0
64	3	4	54	3	0
65	2	0	0	0	0
66	5	7	0	1	0
67	0	0	0	0	0
68	149	272	0	0	0
69	103	52	1	15	0

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
70	0	0	0	9	0
71	4	0	0	0	0
72	0	1	0	2	1
73	0	0	0	0	0
74	0	0	0	0	0
75	0	0	0	0	0
76	0	0	0	1	0
77	0	1	0	4	0
78	0	2	0	1	0
79	10	18	10	5	0
80	0	0	4	0	0
81	2	9	0	2	0
82	0	0	0	15	0
83	0	0	0	2	0
84	0	0	3	52	0
85	0	0	0	0	0
86	0	4	0	1	0
87	3	0	0	1	4
88	0	0	0	1	0
89	0	0	0	0	0
90	0	0	0	0	0
91	0	0	0	0	0
92	0	0	0	0	0
93	0	0	0	0	0
94	0	2	0	18	0
95	0	0	0	0	0
96	0	0	0	1	0
97	0	0	0	34	0
98	0	0	0	15	0
99	80	0	0	8	10
100	0	3	0	30	0
101	1	0	2	1	0
102	0	1	0	7	0
103	0	0	0	1	0
104	1	0	0	104	0

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
105	4	0	0	0	0
106	0	0	0	0	0
107	0	0	0	2	0
108	1	2	0	0	0
109	0	0	0	1	0
110	0	0	6	0	0
111	0	0	0	0	0
112	0	0	0	4	0
113	125	17	56	26	0
114	37	26	15	59	0
115	98	526	59	17	0
116	6	0	0	7	0
117	20	18	0	7	0
118	0	0	8	44	0
119	274	8	0	0	15
120	0	0	0	0	0
121	0	0	0	0	0
122	89	101	0	3	1
123	13	0	0	0	0
124	0	0	0	1	0
125	45	0	0	0	0
126	64	92	0	0	0
127	612	190	0	0	0
128	0	0	0	0	0
129	11	121	26	0	0
130	0	0	132	76	0
131	0	0	0	21	5
132	0	0	0	2	0
133	10	0	0	4	0
134	0	0	0	14	0
135	0	0	0	0	0
136	0	0	0	0	0
137	0	0	0	0	0
138	28	3	5	2	0
139	0	0	0	2	0

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
140	0	8	0	11	0
141	0	0	0	0	0
142	0	0	0	0	0
143	21	5	40	17	0
144	0	0	0	0	0
145	0	0	0	5	0
146	10	2	57	16	20
147	0	143	126	35	20
148	0	974	66	78	13
149	15	141	171	30	13
150	0	0	0	0	0
151	26	15	30	42	8
152	0	0	0	20	0
153	0	0	0	105	0
154	12	2	6	0	0
155	40	8	0	1	0
156	0	0	0	0	0
157	0	0	0	1	0
158	2	20	23	0	19
159	8	4	0	302	57
160	0	0	0	50	0
161	0	0	0	0	0
162	0	0	0	2	0
163	0	0	0	38	3
164	235	0	56	17	0
165	215	0	0	0	0
166	0	1	0	2	0
167	0	0	0	2	0
168	0	0	0	2	0
169	0	0	0	1	0
170	0	0	0	6	0
171	2	0	4	18	0
172	34	0	10	5	0
173	0	0	0	0	0
174	12	5	0	7	0

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
175	0	0	0	7	0
176	0	0	11	16	0
177	0	13	1	12	0
178	0	0	0	22	0
179	7	80	13	36	3
180	0	0	0	14	0
181	0	3	0	2	0
182	0	0	0	10	0
183	5	0	0	41	0
184	65	0	0	1	0
185	265	2	0	9	0
186	0	0	0	28	1
187	218	0	5	24	3
188	15	5	5	0	0
189	180	6	0	1	0
190	0	0	0	0	0
191	21	0	0	2	0
192	0	0	0	0	0
193	0	0	0	0	0
194	0	0	5	1	0
195	325	0	0	550	0
196	1095	0	0	0	0
197	12	34	6	6	0
198	0	0	42	65	16
199	250	0	0	0	0
200	522	54	0	58	0
201	75	12	0	56	0
202	0	0	0	1	0
203	0	0	0	5	0
204	0	0	0	0	34
205	0	0	0	2	0
206	0	0	0	0	0
207	0	56	1	21	2
208	0	0	0	0	0
209	0	26	37	104	30

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
210	0	2	0	109	104
211	2	0	0	9	0
212	0	0	0	16	0
213	0	0	0	36	2
214	0	0	0	0	0
215	0	0	0	74	0
216	0	0	0	63	0
217	0	0	0	0	0
218	0	0	0	1175	0
219	0	89	100	111	88
220	1	10	74	95	63
221	16	28	23	11	11
222	0	0	0	30	0
223	0	2	0	155	0
224	0	0	0	0	0
225	0	0	0	4	0
226	0	0	0	0	0
227	2	2	0	16	0
228	0	1	30	5	23
229	0	6	0	44	0
230	34	0	0	18	0
231	0	0	0	2	0
232	0	3	0	59	0
233	168	106	0	5	13
234	15	39	0	3	0
235	0	2	0	1	0
236	0	12	29	15	3
237	0	0	0	35	0
238	0	0	3	0	0
239	0	4	0	1	0
240	0	0	0	0	0
241	24	0	0	1	300
242	0	0	0	42	0
243	265	0	0	0	0
244	2	318	0	17	0

Table C-3: 1993 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
245	13	22	10	27	26
246	50	13	10	64	2
247	75	43	6	22	3
248	165	0	0	1	0
249	22	6	3	8	0
250	0	0	0	1	0
251	3	6	0	6	0
252	0	6	0	0	0
253	0	0	0	9	0
254	0	0	0	6	3
255	0	0	0	2	0
256	0	0	0	258	0
257	3	51	42	78	31
258	80	8	30	0	20
259	0	0	0	5	0
260	0	20	0	3	0
261	165	2	0	5	0
262	0	6	0	32	0
263	0	1	4	11	0
264	118	2	0	15	0
265	0	0	0	10	0
266	0	0	0	0	0
267	0	9	4	11	1
268	2	10	32	24	124
269	43	8	6	9	23
270	2	10	0	5	0
271	15	20	0	15	45
272	55	10	15	134	66
273	10	98	19	92	79
274	27	85	33	93	89
275	17	26	0	165	174

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
1	179	8	21	0	0
2	964	154	0	177	0
3	0	9	0	723	0
4	17	0	0	2	0
5	774	0	0	57	0
6	0	0	0	0	0
7	0	66	0	5	0
8	23	10	0	5	0
9	72	4	0	8	371
10	60	7	0	37	0
11	11	11	4	157	3
12	767	476	500	86	16
13	4	27	0	35	82
14	16	27	94	38	0
15	0	11	0	10	0
16	82	90	6	40	0
17	27	73	19	31	0
18	4	0	0	11	0
19	0	0	0	0	0
20	0	0	0	0	0
21	0	0	0	0	0
22	0	0	0	18	0
23	14	0	0	0	0
24	0	0	0	17	0
25	0	0	0	0	0
26	10	17	168	30	1
27	0	10	35	61	0
28	0	0	0	29	69
29	0	0	0	34	0
30	0	0	0	0	0
31	0	0	0	0	0
32	0	0	0	16	0
33	0	0	0	13	0
34	0	0	0	13	0

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
35	0	0	0	13	0
36	0	0	0	0	0
37	0	0	0	0	0
38	17	12	0	28	0
39	0	0	0	0	0
40	0	0	0	11	0
41	0	11	0	0	0
42	0	67	0	4	0
43	300	32	0	69	0
44	0	30	0	0	0
45	604	86	0	72	0
46	30	129	0	22	0
47	13	0	0	0	0
48	0	0	0	0	0
49	0	0	2	0	99
50	44	9	20	1	0
51	20	0	10	13	0
52	55	44	11	11	0
53	52	30	35	26	0
54	49	66	194	26	0
55	0	0	0	33	0
56	0	0	0	0	0
57	0	0	0	96	0
58	44	6	0	10	0
59	0	0	0	0	0
60	28	14	0	319	13
61	9	9	32	55	36
62	10	13	0	134	0
63	75	0	0	38	0
64	8	11	147	8	0
65	32	0	0	0	0
66	47	66	0	9	0
67	0	0	0	0	0
68	188	343	0	0	0
69	169	85	2	25	0

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
70	0	0	0	39	0
71	14	0	0	0	0
72	0	4	0	7	4
73	0	0	0	0	0
74	0	0	0	0	0
75	0	0	0	0	0
76	0	0	0	11	0
77	0	3	0	12	0
78	0	22	0	11	0
79	36	64	36	18	0
80	0	0	34	0	0
81	7	30	0	7	0
82	0	0	0	45	0
83	0	0	0	32	0
84	0	0	4	61	0
85	0	0	0	0	0
86	0	12	0	3	0
87	44	0	0	15	59
88	0	0	0	111	0
89	0	0	0	0	0
90	0	0	0	0	0
91	0	0	0	0	0
92	0	0	0	0	0
93	0	0	0	0	0
94	0	3	0	27	0
95	0	0	0	0	0
96	0	0	0	11	0
97	0	0	0	44	0
98	0	0	0	25	0
99	104	0	0	10	13
100	0	13	0	130	0
101	29	0	57	29	0
102	0	5	0	33	0
103	0	0	0	11	0
104	1	0	0	114	0

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
105	14	0	0	0	0
106	0	0	0	0	0
107	0	0	0	32	0
108	38	75	0	0	0
109	0	0	0	11	0
110	0	0	116	0	0
111	0	0	0	0	0
112	0	0	0	114	0
113	186	25	84	39	0
114	40	28	16	63	0
115	113	609	68	20	0
116	57	0	0	66	0
117	69	62	0	24	0
118	0	0	13	69	0
119	283	8	0	0	16
120	0	0	0	0	0
121	0	0	0	0	0
122	139	158	0	5	2
123	23	0	0	0	0
124	0	0	0	111	0
125	75	0	0	0	0
126	109	157	0	0	0
127	696	216	0	0	0
128	0	0	0	0	0
129	12	129	28	0	0
130	0	0	138	80	0
131	0	0	0	29	7
132	0	0	0	112	0
133	89	0	0	35	0
134	0	0	0	24	0
135	0	0	0	0	0
136	0	0	0	0	0
137	0	0	0	0	0
138	35	4	6	3	0
139	0	0	0	12	0

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
140	0	54	0	75	0
141	0	0	0	0	0
142	0	0	0	0	0
143	29	7	54	23	0
144	0	0	0	0	0
145	0	0	0	115	0
146	11	2	62	18	22
147	0	156	138	38	22
148	0	1000	68	80	13
149	16	152	185	32	14
150	0	0	0	0	0
151	32	19	37	52	10
152	0	0	0	50	0
153	0	0	0	135	0
154	30	5	15	0	0
155	130	26	0	3	0
156	0	0	0	0	0
157	0	0	0	11	0
158	5	54	63	0	52
159	8	4	0	310	59
160	0	0	0	60	0
161	0	0	0	0	0
162	0	0	0	12	0
163	0	0	0	47	4
164	243	0	58	18	0
165	225	0	0	0	0
166	0	4	0	9	0
167	0	0	0	12	0
168	0	0	0	12	0
169	0	0	0	11	0
170	0	0	0	16	0
171	3	0	6	26	0
172	110	0	32	16	0
173	0	0	0	0	0
174	67	28	0	39	0

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
175	0	0	0	17	0
176	0	0	56	81	0
177	0	18	1	17	0
178	0	0	0	32	0
179	8	86	14	39	3
180	0	0	0	24	0
181	0	9	0	6	0
182	0	0	0	20	0
183	6	0	0	50	0
184	173	0	0	3	0
185	294	2	0	10	0
186	0	0	0	38	1
187	227	0	5	25	3
188	21	7	7	0	0
189	190	6	0	1	0
190	0	0	0	0	0
191	121	0	0	12	0
192	0	0	0	0	0
193	0	0	0	0	0
194	0	0	13	3	0
195	329	0	0	556	0
196	1105	0	0	0	0
197	14	40	7	7	0
198	0	0	45	70	17
199	260	0	0	0	0
200	530	55	0	59	0
201	80	13	0	60	0
202	0	0	0	11	0
203	0	0	0	15	0
204	0	0	0	0	44
205	0	0	0	12	0
206	0	0	0	0	0
207	0	63	1	24	2
208	0	0	0	0	0
209	0	27	39	109	32

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
210	0	2	0	114	109
211	4	0	0	17	0
212	0	0	0	26	0
213	0	0	0	45	3
214	0	0	0	0	0
215	0	0	0	84	0
216	0	0	0	73	0
217	0	0	0	0	0
218	0	0	0	1185	0
219	0	91	103	114	90
220	1	10	77	99	66
221	18	31	26	12	12
222	0	0	0	40	0
223	0	2	0	165	0
224	0	0	0	0	0
225	0	0	0	14	0
226	0	0	0	0	0
227	3	3	0	24	0
228	0	1	35	6	27
229	0	7	0	53	0
230	41	0	0	21	0
231	0	0	0	12	0
232	0	3	0	69	0
233	185	117	0	6	14
234	18	46	0	4	0
235	0	22	0	11	0
236	0	14	34	18	4
237	0	0	0	45	0
238	0	0	13	0	0
239	0	12	0	3	0
240	0	0	0	0	0
241	25	0	0	1	309
242	0	0	0	52	0
243	275	0	0	0	0
244	2	327	0	18	0

Table C-4: 2020 EMPLOYMENT DATA					
ZONE	INDUSTRY	RETAIL	HWY RET.	SERVICE	OFFICE
245	14	24	11	30	29
246	54	14	11	69	2
247	80	46	6	23	3
248	175	0	0	1	0
249	28	8	4	10	0
250	0	0	0	11	0
251	5	10	0	10	0
252	0	16	0	0	0
253	0	0	0	19	0
254	0	0	0	13	6
255	0	0	0	12	0
256	0	0	0	268	0
257	3	53	44	82	33
258	86	9	32	0	21
259	0	0	0	15	0
260	0	29	0	4	0
261	175	2	0	5	0
262	0	11	0	57	0
263	0	3	12	32	0
264	144	2	0	18	0
265	0	0	0	20	0
266	0	0	0	0	0
267	0	13	6	15	1
268	2	11	34	25	130
269	48	9	7	10	26
270	3	16	0	8	0
271	17	22	0	17	50
272	57	10	16	139	68
273	10	101	20	95	82
274	28	88	34	96	92
275	17	27	0	169	179

THROUGH and EXTERNAL TRIPS

Through trips were estimated using the procedures documented in Technical Report #3: Synthesized Through Trip Table For Small Urban Areas. Table C-5 lists the summary statistics for through and external trips.

Table C-5: THROUGH AND EXTERNAL TRIP SUMMARY

	EXT.	1993			2020		
DESCRIPTION	STA #	ADT	THRU	EXT	ADT	THRU	EXT.
I-77	1	33100	31540	1655	66200	63078	3122
SMITH RD	2	1400	278	1120	2800	551	2249
US 21	3	5700	568	2850	11400	1139	10261
OLD MOCKSVILLE RD	4	1700	339	1360	6800	1354	5446
SEED HOUSE RD	5	190	42	152	760	169	591
I-40	6	24500	23344	1225	49000	46685	2315
SR 2166	7	700	143	560	1400	283	1117
US 64	8	4300	2122	2150	8600	4245	4355
UNNAMED RD	9	10	2	8	10	2	8
US 70	10	7000	3493	3500	16100	6990	9109
MOOSE CAVE RD	11	80	13	64	320	52	268
BETHESDA RD	12	1100	224	880	3300	670	2630
SHILOH CHURCH RD	13	1100	217	880	3300	655	2645
CATTLE BARN RD	14	2600	537	2080	5200	1073	4127
I-77	15	35100	33432	1755	70200	66856	3344
DUCK CREEK	16	60	11	48	180	33	147
MURDOCK RD	17	3200	633	2560	6400	1266	5134
US 21	18	8900	4395	4450	17800	8793	9007
OLD MOUNTAIN RD	19	4100	3062	3280	8200	6122	2078
SHOALS RD	20	2400	479	1920	4800	960	3840
EUFOLA RD	21	300	65	240	1200	260	940
LEWIS FERRY RD	22	600	133	480	2400	533	1867
US 70	23	2000	990	1000	4000	1980	2020
BEAULAH CHURCH RD	24	400	87	320	1600	349	1251
I-40	25	29300	27814	1465	58600	55625	2975
SR 1006	26	700	141	560	1400	276	1124
OLD MOUNTAIN RD	27	2700	543	2160	5400	1090	4310
SR 1521	28	900	184	720	1800	369	1431

Table C-5: THROUGH AND EXTERNAL TRIP SUMMARY							
US 64	29	4700	2349	2350	9400	4699	4701
SR 1551	30	1000	206	800	2000	413	1587
SR 1553	31	500	105	400	1000	207	793
NC 115	32	5450	1084	4360	10900	2169	8731
SR 1907	33	1000	208	800	2000	416	1584
WHITES RD	34	1100	215	880	2200	432	1768

INTERNAL TRIPS

Internal trips were generated and distributed using the gravity model. Table C-6 lists the trip generation rates for 1993 and 2020. Table C-7 lists the percentage of trips categorized by trip purpose. Table C-8 lists the regression equations used for trip attractions. The regression equations are based on Standard Employment Classification (SIC) codes and associated employment trip attraction rates.

Table C-6: TRIP GENERATION RATES FOR 1993 AND 2020	
Excellent DU	14
Above Average DU	12
Average DU	10
Below Average	7
Poor	5
Special	5

Table C-7: PERCENTAGE OF TRIPS CATEGORIZED BY PURPOSE	
Internal of total	85%
Home based work	25%
Other home based	50%
Non home based	25%

Table C-8: REGRESSION EQUATIONS	
HOME-BASE-WORK PURPOSE:	
Trip Attractions = 1.0*(X1+X2+X3+X4+X5)	
OTHER-HOME-BASE PURPOSE:	
Trip Attractions = (0.8*X1)+(1.83*X2)+(10.36*X3)+(2.55*X4)+(2.6*X5)	
NON-HOME-BASE PURPOSE	
Trip Attractions = (0.8*X1)+(1.83*X2)+(10.36*X3)+(2.55*X4)+(2.6*X5)	
EXTERNAL-INTERNAL PURPOSE	
Trip Attractions = (0.8*X1)+(1.83*X2)+(10.36*X3)+(2.55*X4)+(2.6*X5)	
Where: X1 = Industry Employees	X2 = Retail Employees
X3 = Highway Retail Employees	X4 = Service Employees
X5 = Office Employees	

PROJECTIONS

Socio-economic data projections are based on Statesville's population and land-use trends. Figure C-2 illustrates "Statesville's Land Development Plan" map. Figures C-3 and C-4 illustrate "Statesville's Housing Projections" and "Statesville's Employment Projections" respectively. High, medium, and low growth areas for housing and employment were estimated subjectively based on discussions with local officials and Planning Board members.

Land Development Plan Map

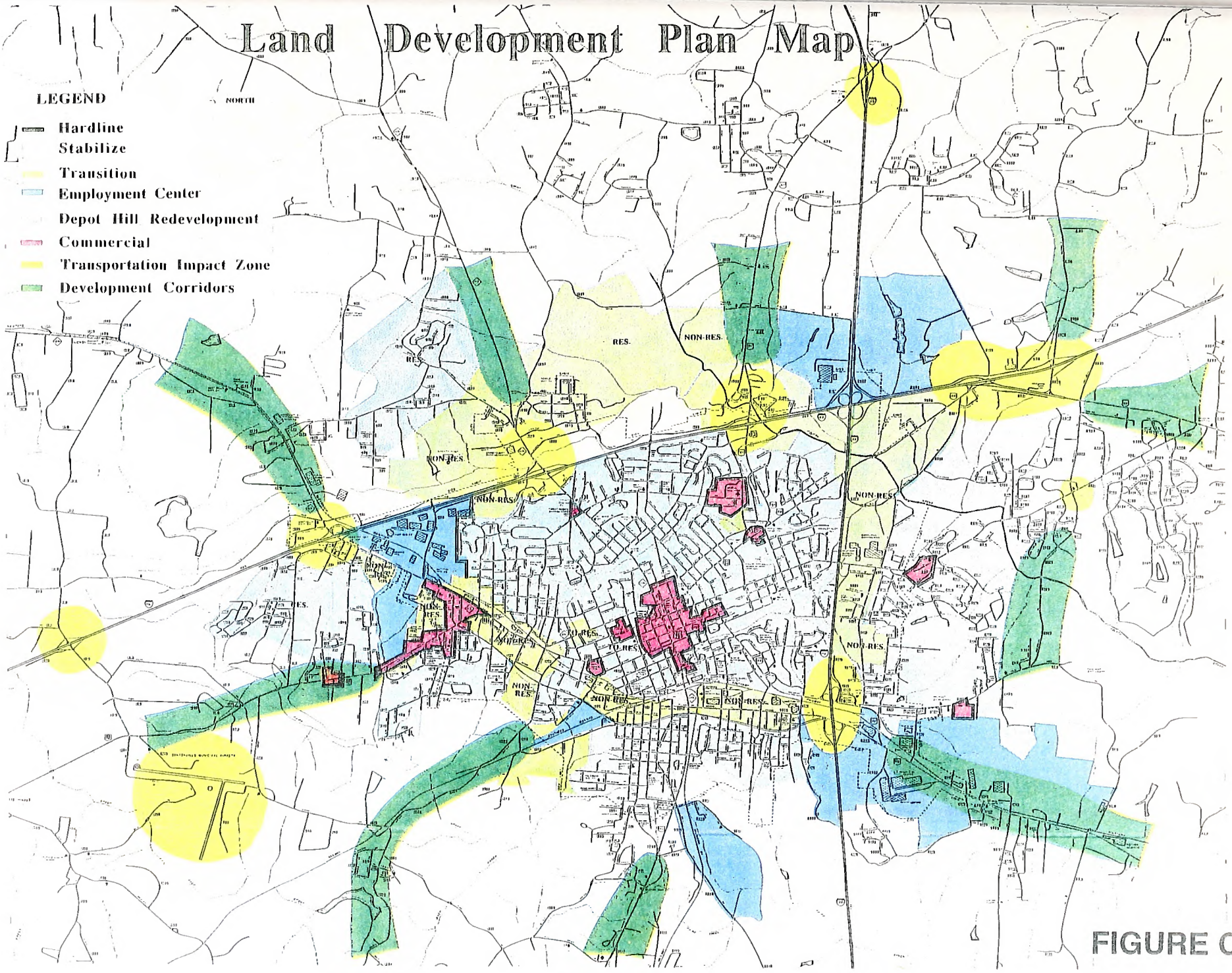


FIGURE C-2

FIGURE C-3

LEGEND

High Growth

Medium Growth

Low Growth

DWELLING UNIT PROJECTIONS

N

STATESVILLE

IREDELL COUNTY

NORTH CAROLINA

FIGURE C-4

LEGEND

High Growth

Medium Growth

Low Growth

EMPLOYMENT PROJECTIONS

N

STATESVILLE

IREDELL COUNTY

NORTH CAROLINA

Appendix D: ENVIRONMENTAL CONCERNS

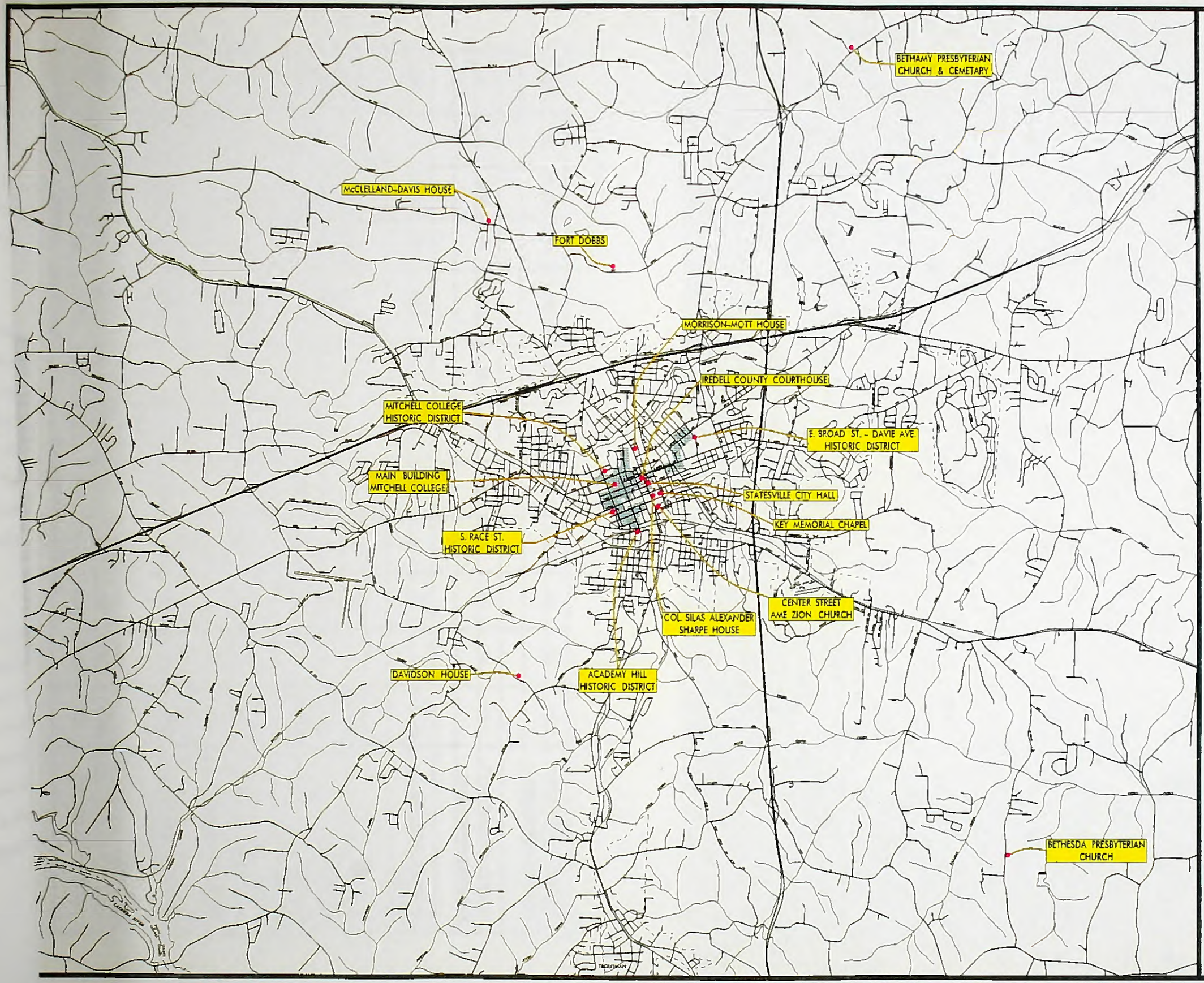
During Statesville's thoroughfare planning process, there were several related items considered. Natural and social environmental concerns such as water supply, and historic property were reviewed.

WATER SUPPLY

Located in North Carolina's western Piedmont, Statesville is near two water supplies -- one on the South Yadkin River, and one in Lake Norman.. On the northern side of Statesville, the thoroughfare planning area boundary does not cross into the water supply on the South Yadkin River. However, on the southwestern side of the planning area, Old Mountain Road is a common boundary between the thoroughfare planning area and the Lake Norman water shed. With the exception of widening a section of Old Mountain Road, Statesville's Thoroughfare Plan does not propose any road improvements in existing water supplies.

HISTORIC PROPERTY

Based on information in the Archeology and Historic Preservation Section of the NC Department of Cultural Resources, there are many historic properties in Statesville's planning area. Figure D-1 illustrates the locations of these areas. In areas where road improvements were necessary, but historic structures are present, the thoroughfare plan minimized historic property impacts by recommending road improvements which will not require any additional right-of-way. For example, the thoroughfare plan recommends increasing the traffic capacity of Davie Avenue through a historic district by using a one-way pair with Stockton Street instead of widening Davie Avenue.



HISTORIC SITES

LEGEND

Historic Site

Historic District

FIGURE D-1

N

STATESVILLE

and vicinity

IREDELL COUNTY

NORTH CAROLINA

PREPARED BY

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS-STATEWIDE PLANNING BRANCH

IN COOPERATION WITH THE

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

BASE MAP

Appendix E: ROUTE INVENTORY

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Airport Road												
Newton - New Airport Road	SR 1379	6	2	N	24	88	N	11,000	2500	4100	30	ADQ
New Airport - Buffalo Shoals	SR 1379	7	2	N	24	88	N	12,000	2900	6500	30	ADQ
Airport Road Extension												
Airport Road Ext - US 70 (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	5400	30	K
Amity Hill Road												
Shelton - R/R	SR 2342	5	2	N	18	56	N	10,000	2600	3500	30	ADQ
R/R - Mills Street	SR 2342	5	2	N	18	88	N	10,000	2800	3600	30	ADQ
Mills Street - I-77	SR 2342	5	2	N	18	88	N	10,000	2800	3600	30	ADQ
Arey Road												
Wood Ridge - Wood Ridge	SR 1337	6	2	N	18	72	N	11,000	2100	4100	30	ADQ
Arey Road Connector (East)												
Hill Haven - Wood Ridge (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	3300	30	K
Arey Road Connector (West)												
Wood Ridge - B. Shoals (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	4200	30	K

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Barkley Road (North)												
Salisbury-Exist Barkley (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	7900	30	K
Existing Barkley-Barkley Rd E	SR 2352	5	2	N	18	56	N	10,000	2500	6900	30	ADQ
Barkley Rd E-3rd Creek (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2900	30	K
Bell Farm Road												
US 64 - US 70	SR 2316	5	2	N	-	72	N	10,000	2000	3000	30	ADQ
Berkshire Drive												
P East End Ext-P Berkshire Ext	NA	-	2	-	-	-	-	10,000	-	6600	30	ADQ
Berkshire Drive Extension												
Exist. Berkshire - Opal (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	6500	30	K
Bethesda Road												
US 70 - SPAB	SR 2359	5	2	N	-	72	N	10,000	1300	2700	30	ADQ
Blue Bird Road												
Cumberland Rd. - Arlie Loop	SR 2345	5	2	N	-	72	N	10,000	-	2500	30	ADQ
Blue Bird Road Ext (East)												
Duck Creek Rd - R/R (Proposed)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2500	30	K

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Blue Bird Road Ext (West)												
Exist Blue Bird - US 21 (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2500	30	K
Bost Street												
Radio Road - Woods Drive	NA	-	2	B	-	56	N	10,000	2000	2700	30	ADQ
Bradley Farm Road												
Monticello Dr. - Old Wilkesb.	SR 1541	6	2	N	-	56	N	10,000	2100	3600	30	ADQ
Old Wilkesboro - Chipley (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	3600	30	K
Bristol Street												
Garner Bagnal Blvd. - US 70	SR 1339	-	2	-	-	-	-	10,000	1700	4200	30	ADQ
Broad Street												
Mulberry - Salisbury	SR 2321	14	2	B	18	40	B	12,000	5000	9600	30	ADQ
Salisbury - Oakwood St.	SR 2321	10	2	N	18	40	B	13,000	5000	7100	30	ADQ
Oakwood St. - East End	SR 2321	19	4	N	18	56	O	22,000	5300	7500	30	ADQ
East End - I-77	SR 2321	19	4	N	19	56	B	22,000	13300	19100	30	ADQ
I-77 - Toria Drive	SR 2321	14	5	N	18	56	N	28,000	15000	22000	30	ADQ
Toria Dr. - Mocksville	SR 2321	7	2	N	18	72	N	13,000	5800	11100	30	ADQ
Brookdale Drive												
Northview - Hartness	NA	10	2	-	18	-	-	12,000	3000	6000	30	ADQ
Hartness - Stockton	NA	10	2	-	18	-	-	12,000	5800	9800	30	ADQ

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Stockton - Davie	NA	10	2	-	18	-	-	12,000	3400	5200	30	ADQ
Brookdale Drive Connector												
Sullivan Rd - Brookdale (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	3000	30	K
Buffalo Shoals Road												
West End - Front (Proposed)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	5400	30	K
Front - Garner Bagnal Blvd	SR 1004	8	2	N	18	56	O	13,000	2900	6500	30	ADQ
Garner Bagnal Blvd-Ericson	SR 1004	6	2	N	18	56	O	11,000	5500	10800	30	ADQ
Ericson St. - PAB	SR 1004	7	2	N	18	72	N	13,000	2500	6200	30	ADQ
Cannon Road												
Wood Bridge - Island Ford	SR 1517	DIRT	2	N	-	56	N	8,000	300	1500	30	K
Cannon Road Connector												
Wood Bridge-Exis Cannon (Pro)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1500	30	K
Carolina Avenue North												
Sullivan - Brookdale	NA	10	2	-	18	-	-	12,000	3400	7500	30	ADQ
Brookdale - Woods	NA	10	2	-	18	-	-	12,000	3400	4500	30	ADQ
Center Street												
City Limit - Old Wilkesboro	NC 115	7	2	N	18	56	N	(28,000)	6900	13500	30	E
Old Wilkesboro - I 40	NC 115	11	3	N	18	56	N	(28,000)	14300	25100	30	E

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
I 40 - Race	NC 115	12	4	N	18	56	N	(28,000)	12800	22200	30	C
Race - Ridgeway	NC 115	12	4	N	18	56	O	22,000	8000	13700	30	ADQ
Ridgeway - Stockton	NC 115	8-11	2	N	18	56	B	13,000	9000	12500	30	ADQ
Stockton - Water	NC 115	18	5	O	18	40	B	28,000	8200	14100	30	ADQ
Water - Shelton Ave.	US 21	18	4	B	18	40	B	22,000	14000	17100	30	ADQ
Chestnut Grove Road												
Old Mocksville - River Hill Rd	SR 2169	5	2	N	-	72	N	10,000	500	1000	30	ADQ
Chipley Ford Road												
NPAB - Center St.	SR 1907	5	2	N	18	72	N	10,000	1700	4000	30	ADQ
Clements Road												
Murdock - Shiloh Church (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	4900	30	K
Shiloh Road - Dead End	SR 2358	5	2	N	-	72	N	10,000	-	700	30	ADQ
Dead End - Bethesda Rd (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	700	30	K
Cooper Farm Road												
Gryder - Sullivan Farm Rd. Ext.	SR 1925	7	2	-	18	-	-	13,000	500	1300	30	ADQ
Sullivan Farm Rd. - Fort Dobbs	SR 1925	5	2	-	18	-	-	10,000	500	1500	30	ADQ
Crawford Road												
Jane Sowers - Victory Lane	SR 2174	5-7	2	N	18	72	N	12,000	1500	2000	30	ADQ

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Davie Avenue												
I-77 - Valley	US 64	7	2	N	18	56	N	12,000	4600	7000	30	ADQ
Valley St. - Sullivan	US 64	10	2	N	18	56	N	13,000	8800	11000	30	ADQ
Sullivan - Euclid	US 64	8	3	N	18	56	N	13,000	9500	8000	30	ADQ
Euclid - Tradd St.	US 64	8	2	N	18	56	B	13,000	9500	8000	30	ADQ
Duck Creek Road												
Moose Club Road - Murdock Rd.	SR 2349	5	2	N	-	72	N	10,000	3200	5800	30	ADQ
East End Avenue												
Davie Ave. - Broad Street	NA	12	2	B	18	56	N	(28,000)	8800	15800	30	E
Broad Street - Front Street	NA	10-11	2	N	18	56	N	13,000	3000	8700	30	ADQ
East End Avenue Extension												
East End - Berkshire Dr (Prop)	NA		NA	NA	NA	NA	NA	(13,000)	NA	7000	30	K
Eastside Drive												
Broad - Scott Road	SR 2333	7	2	N	12	56	N	(28,000)	13000	17000	30	E
Scott Road - Salisbury	SR 2333	7	2	N	12	56	N	(28,000)	10500	14100	30	E
Fanjoy Road												
US 70 - Twin Oaks Road	SR 2316	-	2	-	-	-	-	10,000	1000	1000	30	ADQ
Folger Drive												

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Marlou - Salisbury Rd. (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1000	30	K
Salisbury - Dead End	NA	7	2	-	18	-	-	12,000	300	1000	30	ADQ
Free Nancy Avenue												
Sullivan Rd - Davie Ave (Prop)	NA	NA	NA	NA	NA	NA	NA	9,000	NA	1000	30	K
Front Street												
Garner Bagnal Blvd - Meacham	NC 90	14	4	-	30	-	-	24,000	3900	4000	30	ADQ
Meacham - Newton	NC 90	-	4	-	-	-	-	24,000	4000	4500	30	ADQ
Newton - Buffalo Shoals	US 64	7	2	-	18	-	-	12,000	3400	4000	30	ADQ
Buffalo Shoals - Mulberry	US 64	8	2	-	18	-	-	13,000	2500	2500	30	ADQ
Mulberry - Tradd	US 64	-	4	-	18	-	-	24,000	2000	2000	30	ADQ
Tradd - Salisbury	NA	11	2	-	18	-	-	13,000	1500	1900	30	ADQ
Salisbury - East End	NA	8	2	-	18	-	-	13,000	2700	3000	30	ADQ
Gaither Road												
Center St - Museum Rd (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1900	30	K
Museum Road - Sullivan Road	SR 1965	8	2	-	18	-	-	13,000	1400	5400	30	ADQ
Garner Bagnal Boulevard												
Front St. - Newton Drive	US 70	7	2	N	45	72	N	(24,000)	6000	20000	ADQ	F
Newton Drive - Oakland Avenue	US 70	7	2	N	45	72	N	(24,000)	10000	20000	ADQ	F
Oakland Avenue - Buffalo Shoals	US 70	7	2	N	45	72	N	(24,000)	13600	20000	ADQ	F
Buffalo Shoals - Wilson Lee	US 70	7	2	N	45	72	N	(24,000)	10000	20000	ADQ	F

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Wilson Lee St. - Center St.	US 70	7	2	N	45	72	N	(24,000)	12200	20000	ADQ	F
Center Street - Monroe St.	US 70	7	2	N	45	72	N	(24,000)	15000	20000	ADQ	F
Monroe St. - Salisbury Rd.	US 70	13	4	N	45	72	N	(24,000)	12000	16100	ADQ	F
Glenway Drive												
US 21 - End of shopping center	NA	-	3	-	-	-	-	(28,000)	13000	20000	30	E
Shopping Center-James Farm Rd.	NA	-	2	-	-	-	-	10,000	3000	4000	30	ADQ
Greenbriar Road												
US 64 - Twin Oaks Road	SR 2320	5-7	2	N	15	72	N	11,000	2200	8000	30	ADQ
Twin Oaks Rd - US 70 (Proposed)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	5300	30	K
Gryder Road												
Chipley Ford - Shumaker	SR 1924	5	2	-	18	-	-	10,000	2000	5000	30	ADQ
Harris Street												
Garner Bagnal Blvd - Dead End	NA	-	2	N	-	56	O	10,000	1900	6900	30	ADQ
Dead End - Mills Road (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	6000	30	K
Hartness Road												
Center - Radio	NA	13	2	N	18	56	O	13,000	5000	6000	30	ADQ
Radio - Brookdale	NA	11-13	2	N	18	56	N	13,000	5700	8800	30	ADQ
Hill Haven Road												

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Wallace Springs - Shelton	SR 1381	5	2	N	18	72	N	10,000	2300	4100	30	ADQ
Interstate 40												
WPAB - Front Street	I-40	14	4	N	78	104	N	(80,000)	31500	63000	91	L
Front - I-77	I-40	14	4	N	78	88	N	(80,000)	40600	77900	91	L
I-77 - EPAB	I-40	14	4	N	78	104	N	(80,000)	36400	66700	91	L
Interstate 77												
NPAB - I-40	I-77	14	4	N	61	104	N	(80,000)	33100	80000	91	L
I-40 - Garner Bagnal Blvd.	I-77	14	4	N	78	88	N	(80,000)	36900	81000	91	L
Garner Bagnal - SPAB	I-77	14	4	N	96	104	N	(80,000)	35100	75100	ADQ	L
Island Ford Road												
Old Mountain Rd. - West Front	SR 1006	5	2	N	18	72	N	10,000	2600	3600	30	ADQ
James Farm Road												
US 21 - Glenway Drive	SR 2173	5-7	2	N	18	72	N	11,000	1000	3000	30	ADQ
Glenway - Jane Sowers Road	SR 2173	5-7	2	N	18	72	N	11,000	1000	3000	30	ADQ
Jane Sowers Road												
Sullivan - James Farm Road	SR 2171	5	2	N	15	72	N	10,000	3900	5200	30	ADQ
James Farm - Old Mocksville Rd.	SR 2171	5	2	N	15	72	N	10,000	2000	3000	30	ADQ
Little Farm Road												

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Scotts Creek Road - US 64	SR 1548	6	2	N	18	72	N	10,000	1400	1600	30	ADQ
Marlou Street												
East Side - Folger	SR 2332	5	2	N	18	56	N	10,000	-	1000	30	ADQ
Meacham Road												
North Side - Front	SR 1639	5	2	N	18	56	N	10,000	3000	5300	30	ADQ
Mills Road												
US 21 - Duck Creek Road	SR 2348	5	2	N	12	72	N	10,000	2000	6000	30	ADQ
Duck Creek Road - Amity Hill	SR 2348	5	2	N	12	72	N	10,000	2000	2500	30	ADQ
Mocksville Road												
Simonton Road - Simonton Road	US 64	7	2	N	18	56	N	12,000	3800	6000	30	ADQ
Simonton Road - US 64	US 64	7	2	N	18	56	N	12,000	7000	10500	30	ADQ
Monroe Street												
Shelton - Wall St.	SR 2340	13	2	N	15	56	O	13,000	1300	2000	30	ADQ
Monticello Drive												
Cannon Rd - US 64 (Proposed)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1500	30	K
US 64 - Bradley Farm Road	-	5	2	N	15	-	N	10,000	3000	6000	30	ADQ
Moose Cave Road												

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
US 70 - Bethesda Road	-	-	2	-	-	-	-	10,000	1600	3500	30	ADQ
US 70-Exist Moose Cave (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	3500	30	K
Murdock Road												
US 21 - Amity Hill	SR 2350	-	2	-	-	-	-	10,000	-	9000	30	ADQ
Murdock Road (Lippard Farm)												
US 64 - Island Ford Road	SR 1521	5	2	N	-	72	N	10,000	-	3000	30	ADQ
Old Mountain - Island F (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2200	30	K
Murdock Road Extension												
US 64 - Scotts Creek Rd (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1200	30	K
Museum Road												
Chipley Ford - 90 degree turn	NA	5	2	N	-	56	N	10,000	600	2500	30	ADQ
90 deg. turn - James F. (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1800	30	K
NC 115												
NPAB - Sullivan Farm Road	NC 115	7	2	N	-	88	N	13,000	5500	10500	30	ADQ
Sullivan Farm Rd. - Center St.	NC 115	7	2	N	-	88	N	13,000	7000	13400	30	ADQ
Newton Drive												
City Limit-Garner Bagnal Blvd	US 70	11	2	-	15	-	-	13,000	5700	8600	30	ADQ
Garner Bagnal Blvd - Front	NA	11	2	-	18	-	-	13,000	2000	2700	30	ADQ

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
North Side Drive												
Front St. - Mechem Road	SR 1621	6	2	N	18	56	N	10,000	2000	2500	30	ADQ
Mechem Road - Center Street	SR 1621	6	2	N	18	56	N	10,000	3800	5800	30	ADQ
Oakland Avenue												
Garner Bagnal Blvd. - Front	NA	11	2	N	18	40	N	13,000	4600	4700	30	ADQ
Front - Ridgeway Ave.	NA	8	2	N	18	40	N	13,000	4600	6000	30	ADQ
Old Mocksville Road												
NPAB - Jane Sowers Road	SR 2158	6	2	N	18	72	N	11,000	1700	6900	30	ADQ
Jane Sowers Rd - Wilson Park Rd	SR 2158	6	2	N	18	72	N	(28,000)	5000	12700	30	E
Old Mountain Road												
Island Ford Road - I-40	SR 1005	6-7	2	N	18	72-88	N	12,000	5000	9400	30	ADQ
I-40 - US 70	SR 1005	6-7	2	N	18	72-88	N	(28,000)	9000	15000	30	E
US 70 - Eufola Road	SR 1005	6-7	2	N	18	72-88	N	12,000	6000	12000	30	ADQ
Eufola Road - SPAB	SR 1005	6-7	2	N	18	72-88	N	12,000	4000	10500	30	ADQ
Old US 64												
WPAB - Grayson Park	US 64	7	2	N	-	88	N	12,000	4700	2000	30	ADQ
Grayson Park - Marble Rd.	US 64	7	2	N	-	72	N	12,000	12000	7000	30	ADQ
Marble Rd. - I 40	US 64	18	5	N	-	72	N	28,000	14000	23700	30	ADQ

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Old Wilkesboro Road												
Scotts Creek Rd - Bradley Farm	SR 1645	7	2	N	18	56-72	N	13,000	2000	3000	30	ADQ
Bradley Farm Rd. - Center St.	SR 1645	7	2	N	18	56-72	N	13,000	3600	5000	30	ADQ
Opal Street												
Salisbury - Diamond Street	NA	6-8	2	N	18	56	N	12,000	1000	5000	30	ADQ
Race Street												
Center - Ridgeway	SR 1640	11	2	N	18	56	O	13,000	4600	8400	30	ADQ
Ridgeway - Front Street	SR 1640	11	2	N	18	56	N	13,000	4000	6000	30	ADQ
Front - Western	SR 1640	11	2	N	18	56	O	13,000	3000	5000	30	ADQ
Western-Wilson Lee (Proposed)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	4600	30	K
Radio Road												
Hartness Rd. - Dead End	NA	8	2	N	18	56	N	13,000	2400	5200	30	ADQ
Dead End - Cooper Farm (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2000	30	K
Ridgeway Avenue												
Oakland - Race	NA	9	2	N	18	40	N	13,000	4600	6000	30	ADQ
Race - Center	NA	14	2	N	18	40	N	13,000	4800	2200	30	ADQ
River Hill Road												
Chestnut Grove Road - US 64	SR 2166	6	2	N	-	72	N	10,000	-	2000	30	ADQ
Exist. River Hill-US 64 (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2600	30	K

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Salisbury Road												
Front - Fox	NA	10-11	2	N	18	56	B	13,000	7000	8000	30	ADQ
Fox - Eastside Drive	NA	13	4	N	18	56	O	22,000	11000	16000	30	ADQ
Eastside Dr. - Barkley Road	NA	7	2	N	18	56	N	13,000	11000	13500	30	ADQ
W Barkley Road - E Barkley Road	US 70	7	2	N	18	56	N	(29,000)	15000	29000	30	C
Scotts Creek Road												
WPAB - Miller Farm Road	SR 1551	5	2	N	18	72	N	10,000	1000	3000	30	ADQ
Miller Farm Road - NC 115	SR 1551	5	2	N	18	72	N	10,000	2000	5000	30	ADQ
Shelton Avenue												
Center St. - Garner Bagnal	US 21	9	2	N	18	56	B	(28,000)	10800	14000	30	E
Garner Bagnal - Amity Hill	US 21	13	4	N	18	56	N	22,000	8600	13000	30	ADQ
Shiloh Church Road												
US 70 - Clements Road	SR 2318	-	2	-	-	-	-	10,000	1100	5200	30	ADQ
Shumaker Drive												
US 21 - NPAB	SR 1922	5	2	N	18	72	N	10,000	1100	2600	30	ADQ
Signal Hill Drive												
Mocksville Rd - Simonton Road	-	-	2	-	-	-	-	13,000	1000	2300	30	ADQ
Simonton Road - Broad Street	SR 2422	13	4	N	18	56	N	22,000	6000	11000	30	ADQ

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Sixth Street												
See Wilson Lee Boulevard	-	-	-	-	-	-	-	-	-	-	-	-
SR 2206												
US 64 - I-40	SR 2206	14	4	N	-	72	N	22,000	5000	8400	30	ADQ
I-40 - Old Mocksville Rd.	SR 2206	14	4	N	-	72	N	22,000	12800	20100	30	ADQ
SR 2206 Extension												
US 64 - Greenbriar Rd (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	7400	30	K
Stamey Farm Road												
I-40 - US 70	SR 1512	6	2	N	-	72	N	11,000	2000	4000	30	ADQ
Exits. Stamey Farm-US 70 (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	4000	30	K
Stevenson Road												
(see Wood Bridge Road)	-	-	-	-	-	-	-	-	-	-	-	-
Stockton Street												
Center Street - Davie Avenue	NA	8	2	-	18	-	-	(13,000)	2700	6000	30	ADQ
Sullivan Road												
Glenway Drive - I-40 WB ramps	US 21	-	5	N	18	56	N	28,000	20000	26700	30	ADQ
I-40 WB ramps - I-40 EB ramps	US 21	-	3	N	-	56	N	(28,000)	16000	28400	30	C

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
I-40 EB ramps - Carolina Ave.	US 21	11	4	N	18	56	B	(28,000)	16000	22300	30	C
Carolina Ave. - Lakeside Dr.	US 21	11	4	N	18	56	B	(28,000)	12300	18200	30	E
Lakeside Dr. - Davie Ave.	US 21	7	2	N	18	56	B	13,000	10000	13000	ADQ	ADQ
Sullivan Farm Road												
Scotts Creek Rd - Chipley Ford	SR 1929	5	2	N	18	72	N	10,000	1000	2500	30	ADQ
Chipley Ford-James Farm (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	2000	30	K
James Farm - Crawford Rd (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	5800	30	K
Crawford-Old Mocksville (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	3300	30	K
Third Creek Road												
Salisbury - Treatment Plant	SR 2354	5	2	N	18	72	N	10,000	-	1700	30	ADQ
Treatment Plant-Barkley (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	1700	30	K
Barkley Rd - Amity Hill (Prop)	NA	NA	NA	NA	NA	NA	NA	(13,000)	NA	4600	30	K
Tradd Street												
Woods - Front Street	NA	8	2	N	18	56	-	13,000	2000	6500	30	ADQ
Twin Oaks Road												
Greenbriar Road - Fanjoy Road	SR 2319	-	2	-	-	-	-	10,000	1000	2000	30	ADQ
US 21 (North of Statesville)												
NPAB - I-77	US 21	7	2	N	18	72	N	(28,000)	7000	13000	30	E
I-77 - Jane Sowers	US 21	7	2	N	18	72	N	(28,000)	5000	13000	30	E

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Jane Sowers-Fourth Creek Land.	US 21	7	2	N	18	72	N	(28,000)	6000	14000	30	E
Fourth Creek Land. - Glenway Dr.	US 21	-	5	N	18	72	N	28,000	9400	14000	30	ADQ
US 21 (South of Statesville)												
SPAB - Amity Hill Road	US 21	7	2	N	18	72	N	12,000	7900	11500	30	ADQ
US 64 (East of Statesville)												
EPAB - Bell Farm Road	US 64	7	2	N	-	88	N	13,000	2900	11000	30	ADQ
Bell Farm Rd. - Broad Street	US 64	7	2	N	-	72	N	(28,000)	9400	16500	30	E
Broad Street - Martin Lane	US 64	7	2	N	-	72	N	(28,000)	9400	12800	30	E
Martin Lane - I-40	US 64	17	4	N	-	72	N	22,000	8100	11800	30	ADQ
US 64 (West of Statesville)												
WPAB - Wood Bridge Road	US 64	-	-	-	-	-	-	13,000	-	8000	30	ADQ
Wood Bridge Road - Old US 64	US 64	-	-	-	-	-	-	13,000	-	11500	30	ADQ
US 70 (East of Statesville)												
Salisbury Rd. - Shiloh Road	US 70	7	2	N	-	72-88	N	(28,000)	13500	23400	30	C
Shiloh Road - Moose Cave Road	US 70	7	2	N	-	72-88	N	(28,000)	10000	22000	30	C
Moose Cave Road - EPAB	US 70	7	2	N	-	72-88	N	(28,000)	10000	17000	30	C
US 70 (West of Statesville)												
WPAB - Airport Road	US 70	7	2	N	18	72	N	12,000	5700	4000	30	ADQ
Airport Road - Mecham Road	US 70	7	2	N	18	72	N	12,000	5700	7000	30	ADQ

		EXISTING CROSS-SECTIONS						CAPACITY	VOLUME		RECOMMENDED	
Street Name and Section	State	WIDTH	LANES	PARK-	R/W	SPEED	SIDE	Current	1992	2020	R/W	Road
	Route	(m)	(#)	ING	(m)	(kph)	WALKS	(Future)	ADT	ADT	(m)	Type
Wall Street												
Salisbury - Monroe	SR 2339	5	2	N	12	56	N	10,000	5700	8300	30	ADQ
Monroe - Garner Bagnal Blvd	SR 2339	6	2	N	12	56	N	11,000	5700	7800	30	ADQ
Wallace Springs Road												
Wilson Lee-Old Mountain Rd	SR 1338	5	2	N	18	72	N	10,000	1600	4000	30	ADQ
Water Street												
Center - Tradd	NC 90	11	2	-	18	-	-	13,000	4900	5800	30	ADQ
Tradd - Davie	NC 90	10	2	-	18	-	-	13,000	4900	5200	30	ADQ
West End Avenue												
Front Street - Center St	NC 90	8	2	N	18	56	B	13,000	5600	9000	30	ADQ
Wilson W. Lee												
Race Street - Shelton St	SR 1339	10	2	B	24	56	B	13,000	7100	12000	30	ADQ
Wood Bridge Road												
(Also called Stevenson Rd)												
I-40 - US 64	SR 1512	5-6	2	N	-	72	N	10,000	2000	4000	30	ADQ
Woods Drive												
Tradd - Carolina	NA	10	2	-	18	-	-	10,000	1000	5000	30	ADQ

Note: The 2020 traffic volumes in this table are from the employment and housing statistics detailed in Appendix B and Appendix C. These 2020 traffic volumes do not include the proposed Theme Park.

Key:

NA	- Not applieable
N	- None
O	- One Side
B	- Both Sides
-	- Not Available
PAB	- Planning Area Boundary
NPAB	- North Planning Area Boundary
SPAB	- South Planning Area Boundary
EPAB	- East Planning Area Boundary
WPAB	- West Planning Area Boundary

Appendix F: TYPICAL THOROUGHFARE CROSS SECTIONS

Cross section "A" illustrates a fully controlled access freeway. Rural Interstates typically have this cross section. The 3.6 meter lanes, wide median and wide shoulders provide maximum speed, efficiency, and safety for travelers.

Cross section "B", illustrates a seven-lane urban roadway. This cross section should only be limited to situations when right-of-way is severely restricted and additional capacity is needed on an existing five-lane roadway. When the conditions warrant six through lanes, cross section "E" is preferable.

Cross section "C" illustrates a five-lane urban roadway with four through lanes and a center turning lane. Turning vehicles crossing the main traffic flow create accident hazards and traffic friction.

Cross section "D" illustrates a six-lane divided highway with a raised median and partial control of access. The 4.8 meter (16') median is the minimum recommended for an urban boulevard type cross section. Medians may be landscaped in urban areas when municipalities assume responsibility for the regular landscaping maintenance.

Cross section "E" illustrates an urban four-lane highway with a raised median and partial control of access. The 4.8 meter (16') median is the minimum recommended for an urban boulevard type cross section. Medians may be landscaped in urban areas when municipalities assume responsibility for the regular landscaping maintenance.

Cross section "F" illustrates an urban four-lane divided highway with curb, gutter and partial control of access. This curb and gutter section only uses half of the right-of-way required by the shoulder section and still allows efficient and safe traffic flow.

Cross section "G" illustrates a four-lane roadway with no center lane for left turns. When traffic volumes are high, vehicles turning left into driveways block traffic in the through lane. Additional left turn lanes are typically necessary at major intersections.

Cross section "H" illustrates a three-lane roadway. For two-directional traffic flow, the center lane can be a turning lane. For one-way traffic flow, all three lanes flow in the same direction with a parallel road operating in the opposite direction.

Cross section "I" illustrates a two-lane road with parking on both sides. Because this facility serves both land use and traffic, it should be designated a minor thoroughfare or a local street.

Cross section "J" illustrates a two-lane road with parking on one side. Because this facility serves both land use and traffic, it should be designated a minor thoroughfare or a local street.

Cross section "K" illustrates a rural two-lane roadway with shoulders. When two lanes will have enough capacity through the design year, but may ultimately need additional capacity, 30 meters of right-of-way are recommended. This allows future local officials the ability to widen the road as much as necessary, up to a four-lane divided cross section with a raised median.

Cross section "L" illustrates a six-lane divided highway with a grass median and full control of access. The median is eight to nine meters wide.

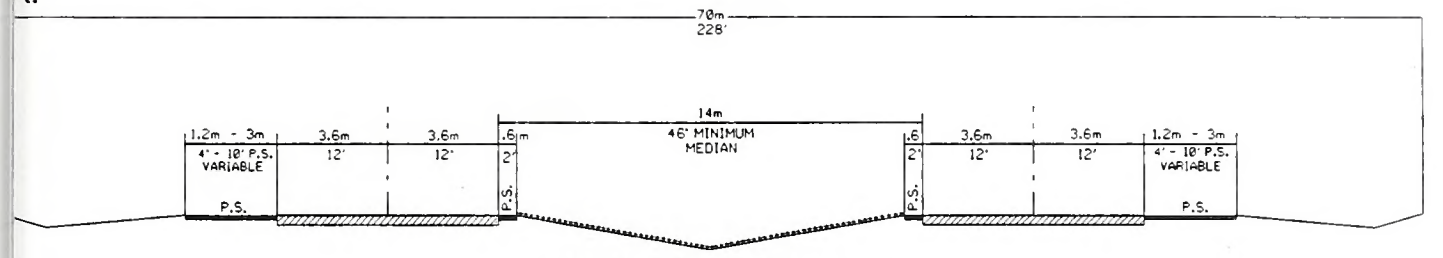
Cross section "M" illustrates an urban eight-lane divided highway with a raised median and partial control of access. Medians may be landscaped in urban areas when municipalities assume responsibility for the regular landscaping maintenance.

The curb and gutter urban cross sections illustrate the sidewalk between the road and the utility strip. The sidewalk width is the minimum recommended safety buffer between moving automobiles and utility poles. For additional pedestrian safety and community aesthetics, municipalities often place sidewalks outside of this buffer zone. Additional right-of-way is necessary if the sidewalk is moved farther away from the street.

Communities encouraging bicycling should allow additional right-of-way for the bicycle facilities. Cross sections N, O and P are typically used to accommodate bicycle travel. The Guide For Development of New Bicycle Facilities published by the American Association of State Highway and Transportation Officials details design standards for bicycle facilities.

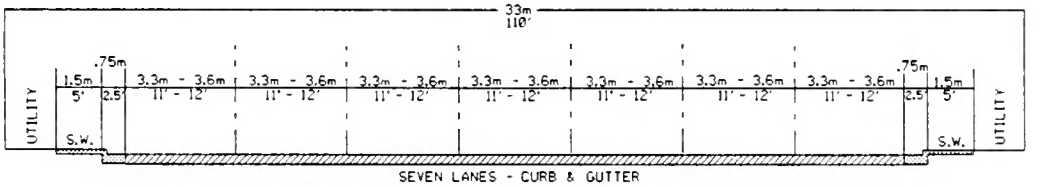
TYPICAL THOROUGHFARE CROSS SECTIONS

A.



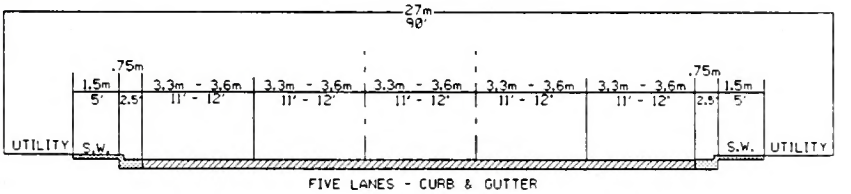
FOUR LANES DIVIDED WITH MEDIAN - FREEWAY

B.



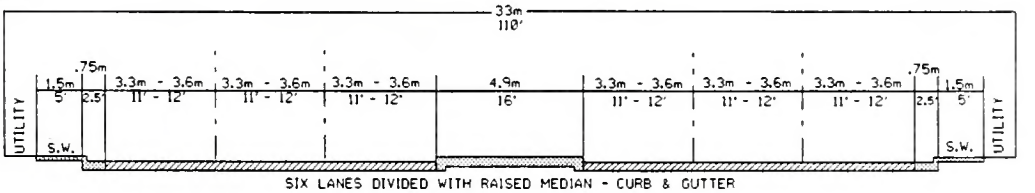
SEVEN LANES - CURB & GUTTER

C.



FIVE LANES - CURB & GUTTER

D.

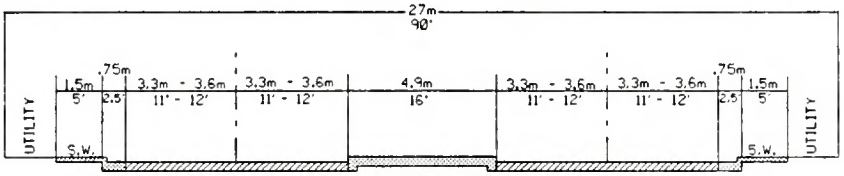


SIX LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER

FIGURE F-1

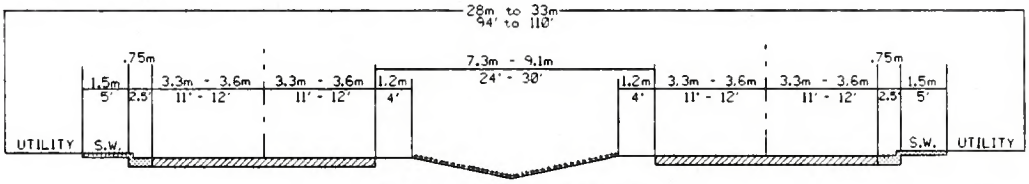
TYPICAL THOROUGHFARE CROSS SECTIONS

E.



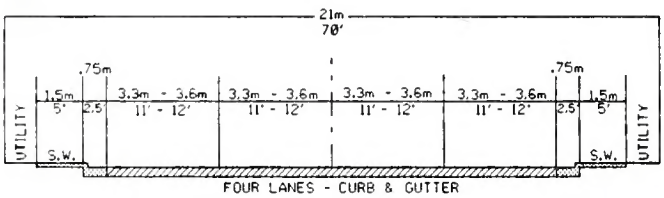
FOUR LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER

F.



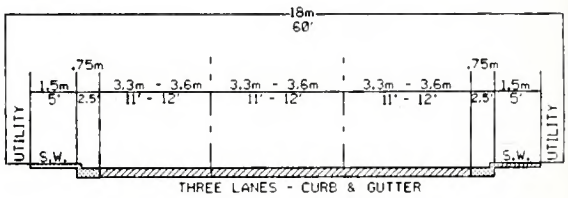
FOUR LANES DIVIDED - BOULEVARD
GRASS MEDIAN

G.



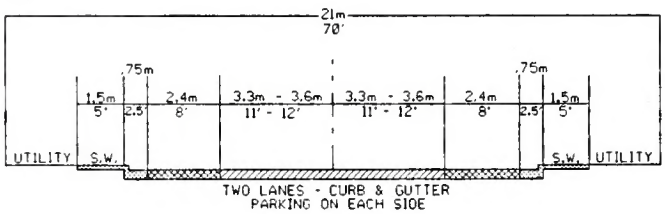
FOUR LANES - CURB & GUTTER

H.



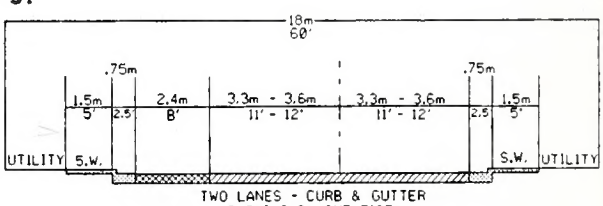
THREE LANES - CURB & GUTTER

I.



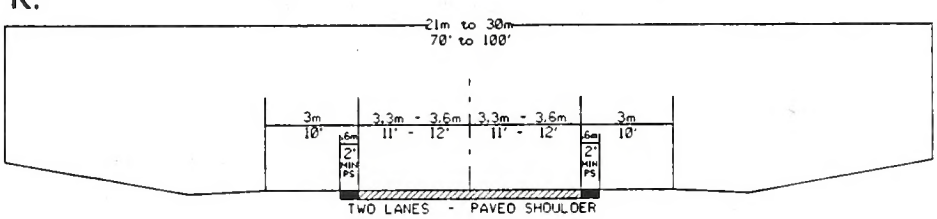
TWO LANES - CURB & GUTTER
PARKING ON EACH SIDE

J.



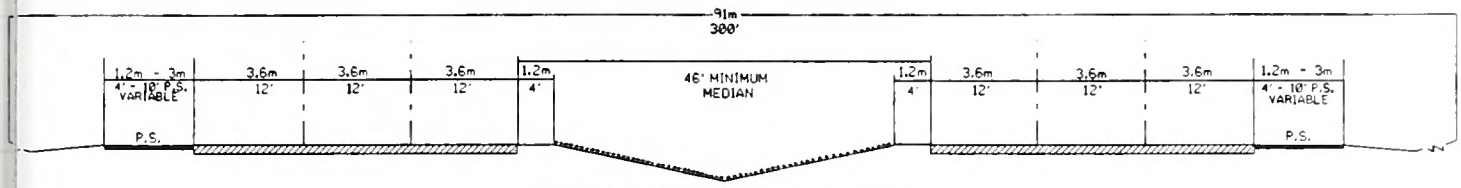
TWO LANES - CURB & GUTTER
PARKING ON ONE SIDE

K.



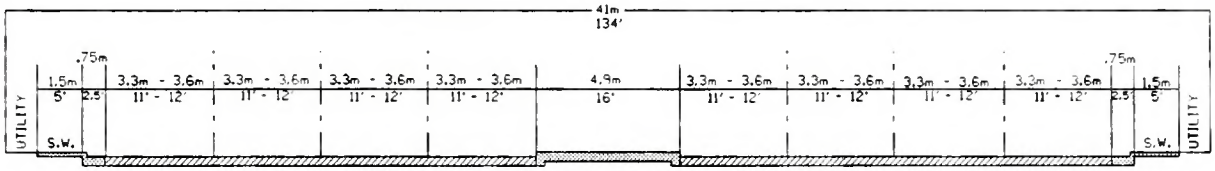
TWO LANES - PAVED SHOULDER

TYPICAL THOROUGHFARE CROSS SECTIONS



SIX LANES DIVIDED WITH GRASS MEDIAN - FREEWAY

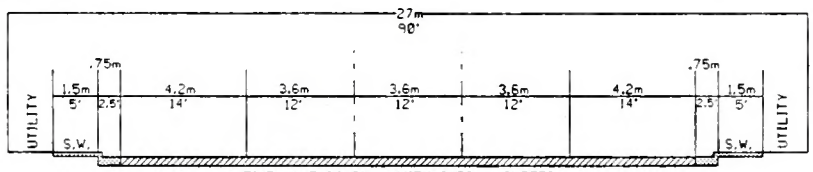
M.



EIGHT LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER

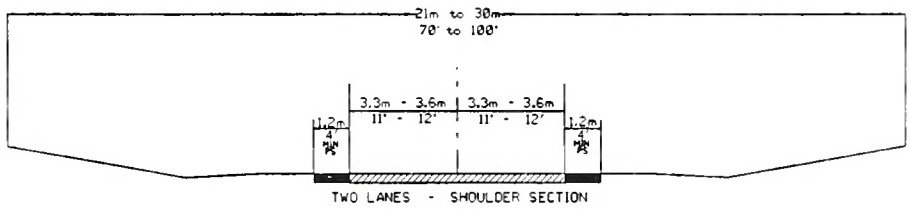
TYPICAL THOROUGHFARE CROSS SECTIONS FOR ACCOMMODATING BICYCLES

N.



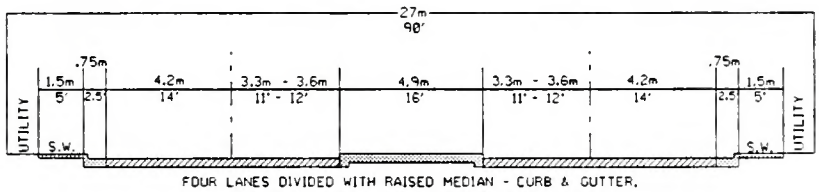
FIVE-LANE ROADWAY WITH CURB & GUTTER,
STANDARD INSIDE LANES & WIDENED CURB LANES

O.



TWO LANES - SHOULDER SECTION

P.



FOUR LANES DIVIDED WITH RAISED MEDIAN - CURB & GUTTER,
STANDARD INSIDE LANES & WIDENED CURB LANES

Appendix G: BENEFITS

Table G-1: BENEFITS FOR MAJOR BYPASS THOROUGHFARES		
I-40 Widening	Benefits (Millions)	$118
	ROW Cost (Millions)	$12
	Construction Cost (Millions)	$108
	Economic Impacts	1
	Environmental Impacts	-0.4
	Through Trips	80%
I-77 Widening	Benefits (Millions)	$48
	ROW Cost (Millions)	$9
	Construction Cost (Millions)	$82
	Economic Impacts	1
	Environmental Impacts	-0.4
	Through Trips	84%

Table G-2: BENEFITS FOR SMALL LOOP THOROUGHFARES		
Proposed East End Avenue Extension & Proposed Berkshire Drive Extension	Benefits (Millions)	$22
	ROW Cost (Millions)	$0.6
	Construction Cost (Millions)	$1.4
	Economic Impacts	0.25
	Environmental Impacts	-0.4
	Through Trips	0%
Garner Bagnal Boulevard (from Front Street to Monroe Street)	Benefits (Millions)	$108
	ROW Cost (Millions)	$0
	Construction Cost (Millions)	$9
	Economic Impacts	1
	Environmental Impacts	-0.2
	Through Trips	22%

Table G-3: BENEFITS FOR MEDIUM LOOP THOROUGHFARES		
Old Mocksville Road	Benefits (Millions)	$2.4
	ROW Cost (Millions)	$0.6
	Construction Cost (Millions)	$6.0
	Economic Impacts	1.0
	Environmental Impacts	-0.6
	Through Trips	9%
Proposed SR 2206 Extension	Benefits (Millions)	$6.8
	ROW Cost (Millions)	$0.3
	Construction Cost (Millions)	$0.5
	Economic Impacts	0.0
	Environmental Impacts	-0.6
	Through Trips	16%

Table G-3: BENEFITS FOR MEDIUM LOOP THOROUGHFARES		
Proposed Greenbriar Road	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$36.2 $1.2 $2.4 1.0 -1.0 34%
Proposed Third Creek Road Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$2.5 $1.0 $2.0 0.5 -1.0 34%
Proposed Blue Bird Road Extension (East and West sections)	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$2.0 $0.9 $1.7 0.5 -0.4 1%
Proposed Arey Road Connector (East and West sections)	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$13.7 $0.9 $1.7 0.0 0.0 1%
Proposed Airport Road Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$26.5 $1.6 $3.0 1.0 0.0 2%
Proposed Cannon Road Connector, Cannon Road, and Proposed Monticello Drive Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$10.9 $2.0 $3.6 1.0 -1.0 3%
Proposed Bradley Farm Road Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$1.9 $0.4 $0.8 0.5 0.2 0%
Proposed Museum Road Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$6.6 $1.5 $2.8 0.5 -1.0 0%

Table G-4: BENEFITS FOR LARGE LOOP THOROUGHFARES		
Sullivan Farm Road Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$16.9 $3.4 $24.3 1.0 -1.0 5%
Proposed River Hill Road Connector	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$0.2 $0.2 $0.4 0.0 1.0 10%
Proposed Moose Cave Road Connector	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$0.2 $0.2 $0.3 0.0 1.0 2.0
Proposed Clements Road Extension (East and West)	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$78.7 $3.9 $7.1 1.0 -1.0 65%
Old Mountain Road	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$34.1 $3.7 $0.4 0.3 0.0 50%
Proposed Murdock Road Connector	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$1.1 $0.3 $0.6 0.0 1.0 50%
Proposed Murdock Road Extension	Benefits (Millions) ROW Cost (Millions) Construction Cost (Millions) Economic Impacts Environmental Impacts Through Trips	$5.6 $1.4 $2.5 0.3 0.7 25%

Table G-5: BENEFITS FOR MAJOR RADIAL THOROUGHFARES		
US 21 Corridor (North of Statesville)	Benefits (Millions)	$174.2
	ROW Cost (Millions)	$5.8
	Construction Cost (Millions)	$11.9
	Economic Impacts	1.0
	Environmental Impacts	0.0
	Through Trips	10%
Mocksville Road Corridor	Benefits (Millions)	$79.4
	ROW Cost (Millions)	$0.5
	Construction Cost (Millions)	$4.3
	Economic Impacts	0.5
	Environmental Impacts	0.8
	Through Trips	25%
Harris Street Corridor	Benefits (Millions)	$49.3
	ROW Cost (Millions)	$2.4
	Construction Cost (Millions)	$4.4
	Economic Impacts	0.5
	Environmental Impacts	-0.6
	Through Trips	0%
US 21 Corridor (South of Statesville)	Benefits (Millions)	$15.8
	ROW Cost (Millions)	$0.2
	Construction Cost (Millions)	$1.4
	Economic Impacts	0.5
	Environmental Impacts	0.5
	Through Trips	2%
Buffalo Shoals Road Corridor	Benefits (Millions)	$3.8
	ROW Cost (Millions)	$0.2
	Construction Cost (Millions)	$0.4
	Economic Impacts	0.2
	Environmental Impacts	0.7
	Through Trips	2%
NC 115 Corridor	Benefits (Millions)	$37.5
	ROW Cost (Millions)	$0.3
	Construction Cost (Millions)	$2.6
	Economic Impacts	0.8
	Environmental Impacts	0.8
	Through Trips	3%

Table G-6: BENEFITS FOR CROSS-TOWN STREETS		
Race Street	Benefits (Millions)	$1.8
	ROW Cost (Millions)	$0.5
	Construction Cost (Millions)	$1.0
	Economic Impacts	0.2
	Environmental Impacts	1.0
	Through Trips	6%

Appendix H: EXAMPLE SUBDIVISION ORDINANCES

DEFINITIONS

Streets and Roads:

Rural Roads

- Principal Arterial - a rural road serving statewide or interstate travel. Principal Arterial roads should serve high volumes of through traffic, not direct land access.
- Minor Arterial - a rural road serving intrastate and inter-county travel by connecting cities and towns. Minor Arterial roads should provide efficient traffic flow, but may have limited direct land access.
- Major Collector - a rural road serving major intra-county travel and large traffic generators. Major Collector roads should connect traffic to the Arterial roads.
- Minor Collector - a rural road serving local communities and moderate traffic generators. Minor Collector roads should provide both traffic movement and direct land access.
- Local Road - a rural road which provides direct access to adjacent land.

Urban Streets

- Major Thoroughfare - a major street which carries high volumes of traffic in and through urban areas. Major Thoroughfares primarily serve traffic movement, not direct land access.
- Minor Thoroughfare - a street which connects local streets to Major Thoroughfares. Minor Thoroughfares should serve both traffic movement and direct land access.
- Local Street - a street which provides direct access to adjacent land.

Specific Streets (Rural or Urban)

- Interstate Highway - a divided multilane highway designed to carry large volumes of high speed traffic through states. Interstate Highways must be accessed by interchanges because they do not provide any direct land access.
- Freeway - a divided multilane highway designed to carry large volumes of high speed traffic. Freeways must be accessed by interchanges because they do not provide any direct land access.
- Expressway - a divided multilane roadway designed to carry large volumes of high speed traffic. Expressways have either full or partial control of access and generally have grade separations at major intersections.
- Parkway - a roadway designed for non-commercial traffic. Parkways may have either full or partial control or access.
- Frontage Road - a road that is parallel to a partial or full access controlled facility. Frontage roads provide direct land access.
- Local Residential Street - a street less than one mile long that does not serve major traffic generators or collect traffic from more than 100 dwelling units. Local residential streets can be cul-de-sacs or circles.
- Alley - a narrow road used only for service vehicles accessing the back side of properties.
- Cul-de-sac - a short street having one end open to traffic and the other end a vehicular turnaround.

Property

- Building Setback Line - a line parallel to the street which specifies the minimum distance between the street right-of-way and buildings.
- Easement - a grant by the property owner limiting the land use on a specific piece of property. For example, the property owner can give or sell easement rights for a street across a particular section of the property.

- Lot - a portion of land which can be bought or sold. A lot may also be referred to as a plat, parcel, or tract.

Subdivision

- Subdivider - a person, firm, corporation or official agent who divides large lots into smaller lots.
- Subdivision - (1) All divisions of a tract of land into two or more lots or building sites for sale or development (2) All divisions of land involving the dedication of new streets or changes in existing streets.
- Dedication - Property given by the owner to another party. Official dedications are made and accepted in writing.
- Reservation - An agreement to keep property free from development for a period of time. Property reservations do not involve any transfer of property rights.

DESIGN STANDARDS

All roads shall be designed in accordance with the NC Department of Transportation design standards and American Association of State Highway and Transportation Officials' (AASHTO) policies. The design standards listed in this appendix are for general reference only. Please refer to the NC DOT Roadway Design Manual or to the AASHTO's A Policy on Geometric Design of Highways and Streets for more detailed information.

Right-of-way

Minimum right-of-way (ROW) for roads shall conform with the recommendations listed in the thoroughfare plan. When the thoroughfare plan does not specify a ROW, the following widths should be used:

Table H-1: MINIMUM RIGHT-OF-WAY	
Rural Roads	Min. ROW
Principle Arterial Freeway	105 meters
Other Principle Arterial	60 meters
Minor Arterial	30 meters
Major Collector	30 meters
Minor Collector	24 meters
Local Road	18 meters (1)
Urban Roads	Min. ROW
Major Thoroughfare other	27 meters
Minor Thoroughfare	21 meters
Local Street	18 meters (1)
Cul-de-sac	Variable (2)

(1) The minimum desirable ROW is 18 meters, but if curb and gutter is provided, 15 meters of ROW are adequate on local residential streets.

(2) The ROW dimension will depend on radius used for vehicular turnaround. The distance from the edge of the pavement of the turnaround to ROW should not be less than distance from edge of pavement to ROW on the street approaching turnaround.

Subdivisions should provide access to properties from local streets. Direct property access to major thoroughfares, principle arterials, minor arterials, and major collectors should be avoided.

When proposed subdivisions conflict with proposed thoroughfares, the subdivider shall dedicate the necessary ROW for the proposed thoroughfare. The subdivider will only be required to dedicate a maximum of 30 meters of ROW. In cases where over 30 meters of ROW are needed, the subdivider should dedicate 30 meters, and reserve the amount in excess of 30 meters.

When a proposed subdivision borders a proposed thoroughfare, and undeveloped land boarders the opposite side of the proposed thoroughfare, partial width ROW may be dedicated. However, the partial ROW must be at least eighteen meters, and the width of the partial dedication must be wide enough to construct necessary facilities to serve

abutting lots. Subsequently, when the undeveloped land on the opposite side of the road is subdivided, the remainder of the required ROW shall be dedicated.

When proposed subdivisions are adjacent to proposed thoroughfare widenings, subdividers shall dedicate the necessary ROW for the proposed thoroughfare widening.

Street Widths

Street widths should conform with the recommendations listed in the thoroughfare plan. When the thoroughfare plan does not specify a street width, the following widths should be used:

- Local residential streets with a curb and gutter should have 7.8 meters of pavement from face-to-face of the curb. Local residential streets with a shoulder should have six meters of pavement and 1.2 meter shoulders.
- Residential collector streets with a curb and gutter should have 10.2 meters from face-to-face of the curb. Residential collector streets with a shoulder should have six meters of pavement and 1.8 meter shoulders.

Geometric Characteristics

The standards outlined below shall apply to all subdivision streets proposed for addition to the State Highway System or Municipal Street System.

Minimum Design Speed

- The design speed should be a minimum of ten kilometers per hour greater than the posted speed limit. The design speeds for subdivision streets shall be:

Table H-2: DESIGN SPEEDS (kph)

Facility Type RURAL	Desirable	Minimum (Level)	Minimum (Rolling)
Minor Collector Roads	100	80	70
Local Roads Including Residential Collectors and Local Residential	80	80	70
URBAN			

Table H-2: DESIGN SPEEDS (kph)			
Facility Type	Desirable	Minimum (Level)	Minimum (Rolling)
Major Thoroughfares other than Freeway or Expressway	100	80	80
Minor Thoroughfares	100	80	70
Local Streets	70	70	50

Maximum and Minimum Grades

- The maximum grades in percent shall be:

Table H-3: MAXIMUM VERTICAL GRADE				
Facility Type	Design Speed (km/h)	Maximum Grade (%) Flat	Rolling	Mountain
RURAL Minor Collector Roads	30	7	10	12
	50	7	9	10
	60	7	8	10
	100	5	6	8
Local Roads including Residential Collectors and Local Residential Streets	30	-	11	16
	50	7	10	14
	60	7	9	12
	100	5	6	-
URBAN Major Thoroughfares other than Freeway or Expressway	50	8	9	11
	60	7	8	10
	100	5	6	8
Minor Thoroughfares	30	9	10	12
	50	9	9	10
	60	9	8	10
	100	6	6	8
Local Streets	30	-	12	17
	50	8	11	15
	60	8	10	13
	100	6	7	-

- Minimum grade should not be less than 0.5%.

- Grades for 30 meters each way from intersections (measured from edge of pavement) should not exceed 5%.
- For streets and roads with projected annual average daily traffic less than 250, short grades less than 150 meters long, may be 150% of the value in the above table.

Minimum Sight Distance

In the interest of public safety, no less than the minimum sight distance applicable shall be provided. Vertical curves that connect each change in grade shall be provided and calculated using the following parameters:

Table H-4: SIGHT DISTANCE

Design Speed (km/h)	30	50	60	90	100
Stopping Sight Distance					
Minimum (meters)	30	60	80	140	160
Desirable (meters)	30	70	90	170	210
Minimum K Value for:					
Crest curve	3	10	18	71	105
Sag curve	4	12	18	40	51

(1) K is a coefficient which the algebraic difference in grade is multiplied to determine the length of the vertical curve which will provide the desired sight distance. (General practice calls for vertical curves to be multiples of 10 meters.)

Maximum Superelevation

The superelevation table below shows the maximum radius and maximum superelevation for design speeds. The maximum rate of roadway superelevation (e) for rural roads with no curb and gutter of 0.08. The maximum rate of superelevation for urban streets with curb and gutter is 0.06.

Table H-5: SUPERELEVATION TABLE		
Design Speed (km/h)	Maximum e	Minimum Radius (meters)
50	0.04	100
60	0.04	150
90	0.04	375
100	0.04	490
50	0.06	90
60	0.06	135
90	0.06	335
100	0.06	435
50	0.08	80
60	0.08	125
90	0.08	305
100	0.08	395
e = rate of roadway superelevation, meter per meter		

Intersections

- Streets shall intersect as nearly as possible at right angles. No street should intersect any other street at an angle less than sixty-five degrees.
- Property lines at intersections should be set so that the distance from the edge of pavement, of the street turnout, to the property line will be at least as great as the distance from the edge of pavement to the property line along the intersecting streets. This property line can be established as a radius or as a sight triangle. Greater offsets from the edge of pavement to the property lines will be required, if necessary, to provide sight distance for the stopped vehicle on the side street.
- Offset intersections should be avoided. Intersections which cannot be aligned should be separated by a minimum length of 60 meters between survey center lines.
- Intersections along major thoroughfares should be spaced at regular intervals. Five hundred meters is the minimum desirable spacing between intersections.

Cul-de-sacs

Cul-de-sacs shall not be more than 150 meters long.

Alleys

Alleys shall be at least sixty meters wide. Dead-end alleys shall be avoided. However, if dead-end alleys are unavoidable, adequate turnaround facilities shall be provided at the dead-end.

Driveways Connecting To State Roads

A permit from the Department of Transportation is required for connecting driveways to any state maintained road. Permit approval is required prior to any construction on the road. Driveway permit applications are available from the District Engineer's office.

Offsets To Utility Poles

On roadways with shoulders, utility poles should be located a minimum of nine meters from the edge of pavement. On streets with curb and gutter, utility poles should be a minimum of 1.8 meters behind the face of the curb.

Wheel Chair Ramps

All street curbs being constructed or reconstructed for maintenance purposes, traffic operations, repairs, correction of utilities, or altered for any reason, shall provide wheelchair ramps for the physically handicapped at intersections where both curb and gutter and sidewalks are provided and at other major points of pedestrian flow.

Bridge Deck Width

The bridge deck widths for new bridges serving 2-lane, 2-way traffic should meet the following specifications:

Shoulder section approach

- If the design year average daily traffic is under 800 vehicles per day, the bridge deck should be three meters wider than the roadway width or 8.4 meters, whichever is greater.
- If the design year average daily traffic is between 800 and 2000 vehicles per day, the bridge deck should be 3.6 meters wider than the roadway width or 10.2 meters, whichever is greater.
- If the design year average daily traffic is over 2000 vehicles per day, the desirable bridge deck is 13.2 meters. The minimum bridge deck width is 12 meters.

Curb and gutter approach

- If the design year average daily traffic is under 800 vehicles per day, the bridge deck should be a minimum of 7.2 meters from face-to-face of curbs.
- If the design year average daily traffic is over 800 vehicles per day, the bridge deck should be the width of the approach pavement from face-to-face of curbs.
- Where curb and gutter sections are used on roadway approaches, curbs on bridges shall match the curbs on approaches in height and in crown drop.

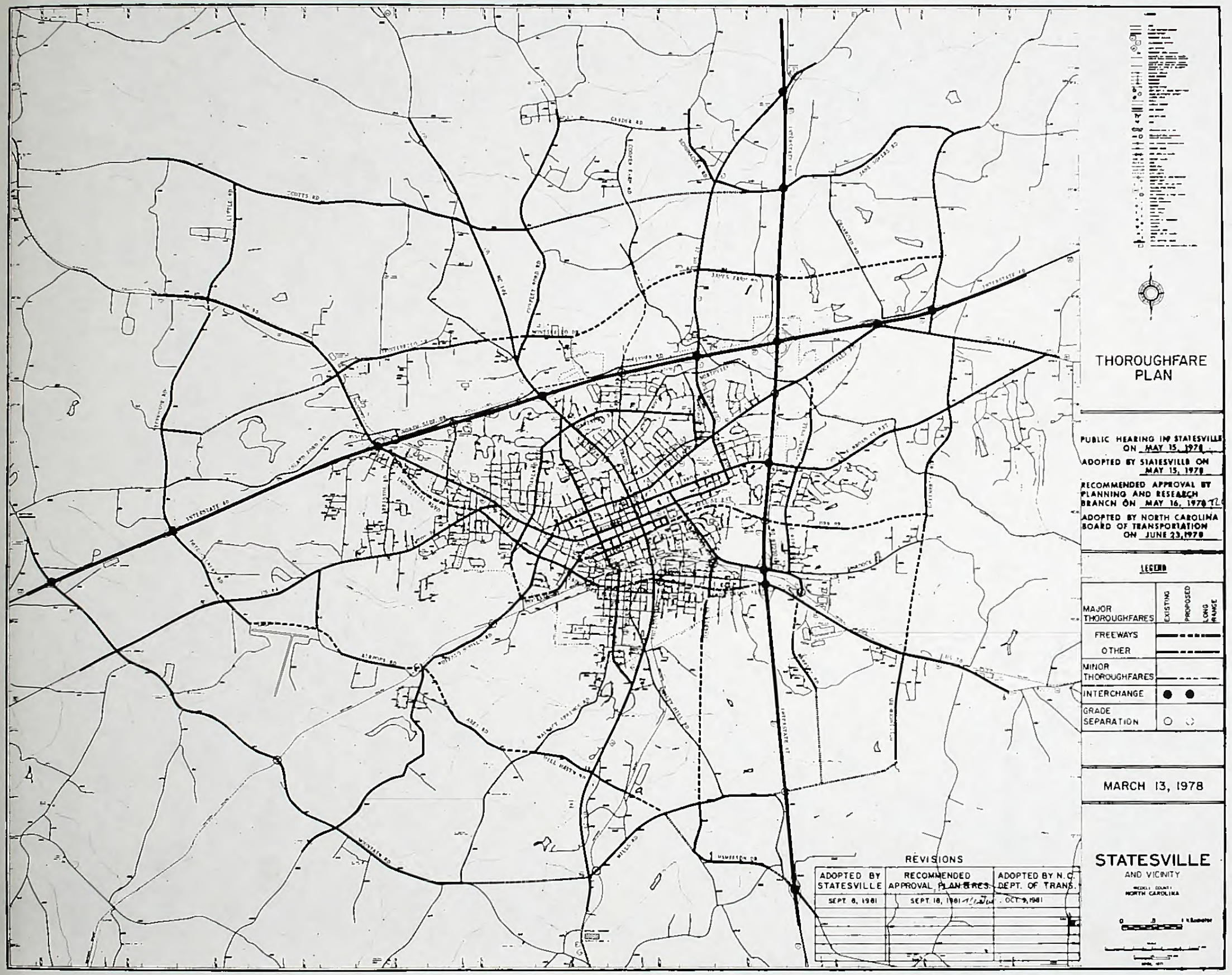
The bridge deck widths for new bridges having four or more lanes serving undivided two-way traffic should meet the following specifications:

1. If the approaching roadway has a shoulder, the bridge deck should have the width of approach pavement plus width of usable shoulders on both sides.
2. If the approaching roadway has a curb and gutter, the bridge deck should have the width the of approach pavement measured from face-to-face of the curbs.

Table H-6 ENGLISH TO METRIC CONVERSION TABLE			
English Units		S.I. Units	
1 inch	equals	25.4 millimeters	(mm)
1 foot	equals	0.3 meters	(m)
1 mile	equals	1.6 kilometers	(km)
1 acre	equals	2.47 hectares	(hect)

Appendix I: THOROUGHFARE PLAN

1978 THOROUGHFARE PLAN



Appendix J: DOT PEDESTRIAN POLICY GUIDELINES

(4-20-94)

EXECUTIVE SUMMARY

These guidelines provide a procedure for implementing the Pedestrian Policy adopted by the Board of Transportation in August 1993. The Pedestrian Policy addresses TIP projects and makes an important distinction between "considering the needs of pedestrians to avoid creating hazards to pedestrian movements" and the concept of "facilitating pedestrian movements for other reasons."

HAZARDS

A hazard in this context is defined as a situation when pedestrian movements are physically blocked in a manner which forces pedestrians to use another mode of transportation or walk in an automobile traffic lane (parallel with the automobile traffic) to pass a barrier. The concept of "not creating a hazard" is intended to allow municipalities to have the flexibility to add pedestrian facilities as part of the project, or in the future after the TIP project is complete. Our current standard cross sections generally do not create barriers for pedestrian movements. One exception is on urban bridges where the bridge rail is at the back of the curb.

QUANTIFYING THE NEED FOR PEDESTRIAN FACILITIES

Planning studies should evaluate the need for pedestrian facilities based on the degree to which the following criteria are met.

1. Local Pedestrian Policy
2. Local Government Commitment
3. Continuity and Integration
4. Location
5. Generators
6. Safety
7. Existing or Projected Pedestrian Traffic

REQUIREMENTS FOR DOT FUNDING

REPLACING EXISTING SIDEWALKS

The DOT will pay 100% of the cost to replace an existing sidewalk which is removed to make room for a widening project.

PREVENTING HAZARDS

If there is evidence that a TIP project would create a hazard to existing pedestrian movements, the DOT will take the initiative to not create the hazard. However, if there is not evidence that a TIP project would create a hazard to existing pedestrian movements, the municipality will need to prove there will be pedestrian movements which will be affected within five years by the hazard created by the TIP project.

INCIDENTAL PROJECTS

Due to the technical difficulty of describing justification for pedestrian facilities, the committee chose a cost sharing approach to provide cost containment for the pedestrian facilities. The DOT may share the incremental cost of constructing the pedestrian facilities if the "intent of the criteria" are met. The DOT will pay a matching share of incidental pedestrian facility total construction costs up to a cap of no more than 2% of total project construction cost. The matching share is a sliding scale based on population as follows:

MUNICIPAL POPULATION	PARTICIPATION	
	DOT	LOCAL
> 100,000	50%	50%
50,000 to 100,000	60%	40%
10,000 to 50,000	70%	30%
< 10,000	80%	20%

FUNDING CAPS

Under normal circumstances, the cumulative funding for preventing hazards and providing incidental pedestrian facilities should not exceed 2% of the total project construction cost.

INDEPENDENT PROJECTS

The DOT will have a separate category of money for all independent pedestrian facility projects in North Carolina. The independent pedestrian facility funds will be administered similar to the Bicycle Program.

RIGHT-OF-WAY

In general, municipalities are responsible for providing any right-of-way needed to construct pedestrian facilities. However, the 2.4 meter (8 foot) berm the DOT generally provides on urban curb and gutter facilities can accommodate pedestrian facilities.

MAINTENANCE

Local governments will be responsible for maintaining all pedestrian facilities.

PEDESTRIAN POLICY GUIDELINES

4-20-94

INTRODUCTION

These guidelines provide a procedure for implementing the Pedestrian Policy adopted by the Board of Transportation in August 1993. The Pedestrian Policy addresses TIP projects and makes an important distinction between "considering the needs of pedestrians to avoid creating hazards to pedestrian movements" and the concept of "facilitating pedestrian movements for other reasons." Consequently, these guidelines are divided into three main sections:

1) Considering the needs of pedestrians to avoid creating hazards.
2) Quantifying the need for pedestrian facilities.
3) Requirements for DOT funding.

CONSIDERING THE NEEDS OF PEDESTRIANS TO AVOID CREATING HAZARDS

Section "d" of the Pedestrian Policy states: "In the planning, design, and construction of TIP transportation projects, the DOT shall consider the needs of pedestrians and will not create hazards to pedestrian movements." This means that during each phase of a project, a DOT employee should consider how the project will affect pedestrian movements. If the project will create a hazard to pedestrian movement, the DOT should use engineering judgment and find a way to remove the hazard. A hazard in this context is defined as a situation when pedestrian movements are physically blocked in a manner which forces pedestrians to use another mode of transportation, or walk in an automobile traffic lane (parallel with the automobile traffic) to pass a barrier.

This does not mean that the DOT should build pedestrian facilities on all TIP projects. However, it does mean that the DOT should consider how projects will affect pedestrians and how projects can be designed to accommodate vehicular demands without creating barriers to pedestrians. Hazards can be divided into two categories, lateral barriers and perpendicular barriers. Lateral barriers prevent pedestrians from traveling parallel to the roadway. Perpendicular barriers prevent pedestrians from crossing a roadway.

The concept of "not creating a hazard" is intended to allow municipalities to have the flexibility to add pedestrian facilities as part of the project or in the future after the TIP project is complete. Because bridges are so expensive and because they often have useful lives over fifty years, bridges should be given special consideration when pedestrian travel is anticipated.

BRIDGES

Current standard cross sections generally do not create barriers for pedestrian movements. One exception is on urban bridges where the bridge rail is at the back of the curb. A bridge which has barrier rail or support columns at the back of the curb and gutter is a lateral barrier. On rural bridges, a minimum shoulder may be sufficient to "not create a hazard for pedestrian movements" over or under the bridge.

SHOULDER CROSS SECTIONS

Currently, there is no typical cross section for a rural road with a shoulder, and a pedestrian facility which is outside of the ditch. However, when a rural road with a shoulder section has a pedestrian facility outside of the ditch, the ditch will not be considered a perpendicular barrier. Similarly, as long as there is some space where pedestrians can walk which is not in an automobile travel lane, the ditch will not be considered a lateral barrier either.

WIDENING PROJECTS

If a TIP project widens a road from 2 lanes to 5 lanes, the new 5-lane road is not considered a perpendicular barrier. Similarly, as long as there is some space where pedestrians can walk which is not in an automobile travel lane, the new 5-lane road is not considered a lateral barrier either.

RELOCATING PEDESTRIAN MOVEMENTS

This policy is not intended to require a pedestrian bridge or tunnel at interchanges where sidewalks and crosswalks are not practical. In these cases, the DOT may consider relocating the pedestrian movement to avoid creating unsafe situations or making unpractical design modifications. Typically, relocated pedestrian movements should be no more than 800 meters (0.5 miles) away from the original path of the pedestrians. The 800 meter distance is a one way distance, not a round trip distance.

CONSTRUCTION PROCESS

During the construction phase of a project, there may be times when it is not possible to maintain all pedestrian movements through the entire construction process. When necessary, there may be temporary barriers to pedestrian movements in the work zone.

EXAMPLE

For example, the "XYZ" Expressway is a new controlled-access freeway through an established urban area. A major thoroughfare with sidewalks which will have a new interchange with the Expressway, connects a neighborhood on the north side of the Expressway with a hospital on the south side of the Expressway. Because the proposed interchange for the major thoroughfare is a Single-Point-Diamond design with free-flowing ramps in all four quadrants, there is no safe way for a pedestrian to cross the Expressway with out conflicting with free-flowing traffic. Although there is a nearby railroad bridge over the Expressway, pedestrians are prohibited from that bridge because it was not designed to accommodate both trains and pedestrians. Consequently, residents who live in a neighborhood a few blocks from the hospital will now need to drive to the hospital or walk through a free-flowing traffic lane.

Using this example with the new pedestrian policy in effect, the design engineer should make every reasonable effort to design this interchange to accommodate the automobile traffic, and not create a barrier for pedestrian movements. If the interchange design requires free-flow ramps as this Single-Point-Diamond design does, the engineer should determine if it is possible for pedestrians to cross the free-flow traffic lanes. If the peak hour traffic flow has acceptable gaps to allow pedestrians to cross safely, the ramps will not be considered a barrier. However, if traffic volumes or pedestrian volumes are too great, an alternative pedestrian facility should be considered. If accommodating pedestrians at the interchange will compromise safety or good engineering judgment, the engineer should consider if shifting the pedestrian movement away from the interchange is a feasible alternative. Since there is a nearby railroad bridge over the Expressway, maybe the railroad bridge could be designed to handle pedestrian movements too.

QUANTIFYING THE NEED FOR PEDESTRIAN FACILITIES

Section "e" of the Pedestrian Policy states: "The Department recognizes there are certain situations in which pedestrian facilities provide significant benefits in the

movement of pedestrian traffic..." If a municipality would like the DOT to consider a project for "significant benefits," the municipality is responsible for collecting any necessary information and submitting a written request prior to the initiation of a planning study. The DOT will review the request and, if necessary, verify the data from the municipality. If pedestrian facilities are not incorporated into a project during the planning phase, and if there are significant factors which change during the time between the project planning study and the project design phase, municipalities may resubmit a request for pedestrian facilities prior to the closure of comment period for the Design Public Hearing.

Planning studies should evaluate the need for pedestrian facilities based on the degree to which the following seven criteria are met. Municipalities should address each of these criteria when submitting requests for pedestrian facilities. Subsequently, the DOT will make the final determination for pedestrian facility eligibility.

1. Local Pedestrian Policy. There is evidence that local policies on urban development are encouraging urban densities and residential developments to occur in a manner to facilitate pedestrian travel by reducing walking distances, and requiring sidewalk construction in development ordinances.
   - Is a pedestrian plan included in local thoroughfare plan?
   - Do subdivision ordinances require pedestrian facility construction?
   - Do local zoning ordinances facilitate pedestrian travel?
     (For example, do the zoning ordinances encourage mixed-use developments which are accessible to pedestrians or do the zoning ordinances encourage highway strip development which is not accessible to pedestrians?)
2. Local Government or Local Sponsor Commitment. There is a local government/sponsor plan and commitment to provide an integrated system of pedestrian facilities which will connect with pedestrian facilities provided by the project.
   - Does the local Capital Improvement Program include local funds for providing pedestrian facilities which will connect with pedestrian facilities provided by the NC TIP project?

- How many pedestrian facilities currently connect with the pedestrian facilities provided by the project?
- How many subdivisions have provided pedestrian facilities which are or will be connected with pedestrian facilities provided by the project?
- Has a responsible local government agency agreed in writing to maintain the pedestrian facility?

3. Continuity and Integration. The project provides a connection to an existing or a proposed pedestrian network and will provide a critical link in the network.
   - Is the project a critical link in an existing network?
     (For example, will this project provide a missing link in an existing network where there are pedestrian facilities extending beyond the length of this project?)
   - Is the project a critical link in a proposed network?
     (For example, will this project provide any link in a proposed network where there will be pedestrian facilities extending beyond the length of this project?)
4. Location. The project is located within a Census defined urban area or growth area where development is anticipated in the immediate future; a majority of the properties within walking distance of the project are developed, or projected to be developed within 5 years at urban type residential densities. This five year period will begin at the completion of the appropriate environmental document.
   - Is the project located in a Census defined urban area?
   - Is the project located in a growth area (Urbanized Area Boundary) where development is anticipated in the immediate future, but is not in a Census defined urban area?
   - Are a majority of the properties within walking distance of the project developed, or projected to be developed within 5 years at urban type residential densities (a minimum of 1 dwelling unit per acre)?
5. Generators. The project serves as a primary access from one or more of the following to one another:
   - day care, elementary or secondary school

- college or university
- community facility (such as library or park)
- public transportation
- commercial, office, industry, or business centers
- residential areas
- Will any of these land-uses within two kilometers (1.2 miles) of the project use this project as a primary access?

6. Safety. The project provides demonstrable safety benefits for pedestrians.
   - Will the pedestrian facility separate pedestrians from automobile traffic with a posted speed greater than 80 kilometers per hour (50 miles per hour)?
   - Will the pedestrian facility be used by children (0-14), elderly (65+), handicapped, or low-income people?
   - Will the pedestrian facility reduce potential pedestrian-vehicle conflicts?
   - Will the pedestrian facility address the identified safety needs of the area?
7. Existing or Projected Traffic. Continued, sustained pedestrian travel can be shown by any of the following:
   - Evidence of existing usage such as well worn paths.
   - Projected usage based on previous experience with similar facilities.
   - Minimum of 150 pedestrians per 24 hour period along a corridor planned for the project.

REQUIREMENTS FOR DOT FUNDING

REPLACING EXISTING SIDEWALKS

Section "b" of the Pedestrian Policy states: "When a highway construction project having to do with the widening of an existing street requires that an existing sidewalk be torn up to make room for the widening, it is the policy of the Department of Transportation to replace the sidewalk." This statement says the DOT will pay 100% of the cost to replace an existing sidewalk which is removed to make room for a widening project. There is no monetary cap for this category of funding pedestrian facilities.

PREVENTING HAZARDS

Section "d" of the Pedestrian Policy states: "In the planning, design, and construction of TIP transportation projects, the DOT shall consider the needs of pedestrians and will not create hazards to pedestrian movements." If there is evidence that a TIP project would create a hazard to existing pedestrian movements, the DOT will take the initiative to not create the hazard. However, if there is not evidence that a TIP project would create a hazard to existing pedestrian movements, the municipality will need to prove there will be pedestrian movements which will be affected within five years by the hazard created by the TIP project. The five year period will begin at the completion of the appropriate environmental document (Categorical Exclusion, Finding of No Significant Impact, or Environmental Impact Statement).

CERTAIN SITUATIONS

Section "e" of the Pedestrian Policy states: "The Department recognizes there are certain situations in which pedestrian facilities provide significant benefits in the movement of pedestrian traffic. The Department of Transportation may participate in the provision of these facilities on a full or shared-cost basis." This statement says the DOT may participate in funding incidental projects, and independent projects as described below.

INCIDENTAL PROJECTS

Incidental pedestrian projects are defined as TIP projects where pedestrian facilities are included as part of the project. The DOT may share the incremental cost of constructing the pedestrian facilities if the "intent of the criteria" are met, and the request for DOT participation is made prior to the closure of comment period for the Design Public Hearing. The DOT will pay a matching share of incidental pedestrian facility total construction costs up to a cap of no more than 2% of total project construction cost. This "total project construction cost" does not include the construction cost of any incidental pedestrian facilities. The matching share is a sliding scale based on population as follows:

MUNICIPAL POPULATION	PARTICIPATION	
	DOT	LOCAL
> 100,000	50%	50%
50,000 to 100,000	60%	40%
10,000 to 50,000	70%	30%
< 10,000	80%	20%

The local government share of the pedestrian facility construction funding may not be Federal or State money for the purposes of these guidelines. In addition, the right-of-way municipalities provide for pedestrian projects may not be counted toward the required local contribution.

INDEPENDENT PROJECTS

Independent pedestrian projects are defined as projects where pedestrian facilities are the entire project. The DOT will have a separate category of money for all independent pedestrian facility projects in North Carolina. The independent pedestrian facility funds will be administered similar to Bicycle Program. Municipalities will prioritize their requests under the enhancements section of the local request list, and the DOT will fund as many projects as funding will allow.

GENERAL INFORMATION

The attached flow chart illustrates the decision process for a project engineer. In addition, the funding caps, right-of-way and maintenance requirements described below must also be met.

FUNDING CAPS

Under normal circumstances, the cumulative funding for preventing hazards and providing incidental pedestrian facilities should not exceed 2% of the total project construction cost. This "total project construction cost" does not include the construction cost of any incidental pedestrian facilities. The 2% cap is intended as a guide, not as an absolute cap. Consequently, the appropriate Branch Manager can approve pedestrian funds over the 2% cap.

RIGHT-OF-WAY

In general, municipalities are responsible for providing any right-of-way needed to construct pedestrian facilities. The DOT will allow pedestrian facilities on DOT right-of-way only if the pedestrian facility will not compromise the safety of vehicles or pedestrians. For preventing hazards, the DOT may buy the necessary right-of-way. For incidental and independent projects the DOT shall not pay extra right-of-way cost for pedestrian facilities.

Since the DOT's typical curb and gutter cross-section generally has a 2.4 meter (8 foot) berm, a 1.5 meter (5 foot) pedestrian facility may fit within this standard right-of-way. However, on curb and gutter sections, most municipalities want a 3 meter (10 foot) berm to put a 1.5 meter (5 foot) grassy strip and a 1.5 meter (5 foot) pedestrian facility. In this situation, the municipalities will need to provide the additional 0.6 meters (2 feet) of right-of-way.

On shoulder cross sections, the DOT typically does not have additional right-of-way behind the ditch. In addition, the DOT does not put paved pedestrian facilities between the road and the ditch. Since the DOT would not typically have the right-of-way needed for a pedestrian facility, the municipality must provide all of the additional right-of-way.

Applicable AASHTO standards for right-of-way and design must be met. The DOT will not narrow automobile travel lanes to accommodate incidental pedestrian facilities. For example, if a project specifies five 3.6 meter (12 foot) lanes on a section of road, the DOT will not reduce the width of the travel lanes to 3.0 meters (10 feet) to create room for pedestrian facilities. In addition, if right-of-way is restricted, and there is insufficient room for pedestrian facilities and a utility strip, the utility strip will take precedence.

Applicable Federal and State regulations must also be met. For example, if right-of-way for a particular project is restricted by historic property, federal regulations on historic preservation may prohibit the DOT from using additional right-of-way for pedestrian facilities.

MAINTENANCE

Local governments are responsible for maintaining all pedestrian facilities. The Municipal Agreement will formally specify that the DOT is not responsible for maintaining pedestrian facilities.

Appendix K: BIBLIOGRAPHY

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